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## SQUADRONS OF THE SEA

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BY ARCH WHITEHOUSE

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*The Story of the Tactical Air Command*  
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*The Years of the Sky Kings*  
*Tank*  
*The Years of the War Birds*  
*Subs and Submariners*  
*Squadrons of the Sea*

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# SQUADRONS OF THE SEA

*Arch Whitehouse*

ILLUSTRATED WITH PHOTOGRAPHS

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*First Edition*

DEDICATED TO *THE SUNDAY PUNCHERS*  
(VA Attack Squadron 75)  
Aboard USS *Independence*  
Who with Solemn Formality  
and Rare Courtesy  
Elected Me  
Honorary Member of Their Squadron.  
August 15, 1960





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## AUTHOR'S NOTE

AIRCRAFT carrier operations, complex in themselves and yet the most methodical of all methods of warfare, are, despite their orderliness, seldom understood by the landsman. For this reason it is my intent to clarify the role of the naval carrier by presenting its history, and relating the story of its triumphs and sacrifices in a manner comprehensive to the lay reader.

As a result this is not a textbook or a treatise on carrier operations. It is simply the story of the historic naval-air conflicts as they were fought between 1939-45. After reviewing the details of these amazing battles I felt compelled to undertake this work, for in my opinion aircraft carrier operations afford more drama, more varied heroism, and certainly greater personal skill and technical knowledge than any other example of modern warfare.

I am not a naval expert. I have never served aboard an aircraft carrier in wartime, nor have I flown a military plane from a flight deck to engage in naval-air combat. I am a professional writer and a shameless enthusiast of military history. More important, I nurture deep respect for the men who by their actions and valor created this history, and who in peacetime add to its pages. I am continually fascinated by their efforts, loyalties, and sacrifices. In them I have high hopes for the future and trust that their sons and daughters will find in these pages the inspiration to tread in their footsteps or give us more of the same heroic breed.

This was not an easy book to write for it required more than the chore of poring through volumes of carrier history. Diligent research is important and necessary, but one should go aboard a carrier at sea, live with the officers and men, and there study every facet of flight operations to understand fully the meaning of past history. One must

imbibe the spirit of deck flying in order to interpret the problems and technical demands these men face and resolve.

I was most fortunate to be invited aboard a number of present-day carriers, and to watch every feature of deck operations by all types of aircraft carrying out their daily exercises, I have been catapulted from flight decks, flown off unassisted, and experienced numerous arrestergear landings. I have seen much of our modern equipment, armament, and electronic devices. As far as service security would permit I was introduced to new gunnery systems, the development of missile armament, and shown how all these instruments and weapons are integrated for the common cause.

At the same time I was permitted to interview all ranks from admirals down to seamen. I was fortunate to find many who had served aboard carriers during World War II, and from these men I was able to confirm or correct the hurried reports or inaccurate statements of several wartime correspondents. In particular I am most appreciative of the co-operation and information furnished by Commander Cook Cleland, who had served with Bombing 16 Squadron aboard U.S.S. *Lexington* during the Battle of the Philippine Sea, and who explained much of the operational detail to me on the bridge of the U.S.S. *Forrestal* while returning from a Sixth Fleet assignment in the Mediterranean. I also met many others while I was a working-guest aboard U.S.S. *Saratoga*, U.S.S. *Lake Champlain*, U.S.S. *Intrepid*, U.S.S. *Independence*, and more recently U.S.S. *Boxer*.

But a book such as this requires also assiduous research to confirm dates, ranks and names, and to make certain that the chronological order of action is correctly recorded. The U. S. Navy provided much official information and contributed many important photographs, but I could not have produced this volume in its present orderliness without the generous assistance of Admiral Samuel Eliot Morison, dean of modern naval historians, who allowed me to use his fourteen-volume *History of U.S. Naval Operations in World War II* as a source of reference. I sincerely recommend Admiral Morison's work to all who are interested in American naval operations of that period. In a later Acknowledgments section I have named others who in any manner came to my aid, as well as a full bibliography covering this subject.

I would remind the reader again that this is offered only as a general history of aircraft carriers, written and presented in a form designed to appeal chiefly to the non-Navy reader or general public. I have avoided much technical jargon and have eliminated whenever

possible much standard nautical nomenclature. Naval purists will immediately note this landsman's approach and will perhaps view these pages critically. But the true Navy man needs no words of mine to assure him of his service's place in the public's appreciation. I am simply offering this book as my contribution to the history of aircraft carrier operations, and it is my hope that it will be accepted and read with this in mind.

ARCH WHITEHOUSE

*Montvale, New Jersey*

*March 31, 1961*



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# SQUADRONS OF THE SEA

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## CHAPTER I

### BORN OF NECESSITY

ON THE evening of August 5, 1918, a British destroyer H.M.S. *Redoubt* left her mooring at Harwich on the east coast of England, towing an ungainly contrivance called a lighter. In this case nomenclature was being stretched considerably, for in truth it was simply a creaky old raft mounted on the gunwales of a bargelike hull. A Sopwith Camel biplane, a World War I fighter of disrepute, was perched on this precarious platform. A young Anglo-Canadian-American by the name of Stuart D. Culley sat in the cockpit hoping that this tangle of Goldbergian gadgets would enable him to clamber off the thirty-knot deck to attack a German Zeppelin reported to be heading for a raid on Britain.

Surprisingly, this fantastic experiment worked and the naval historians of that day recorded the first successful shipborne fighter interception. The enemy Zeppelin was destroyed, but more important, the marriage of the airplane and the surface vessel was consummated. Unlimited range was contrived for the airplane, and the firepower of the surface fleet was greatly increased. The fact that the airplane had to land on the water near its mother destroyer was not important. The problem of retrieving carrierborne aircraft was to be quickly solved.

This incident has long been dismissed and forgotten. At the time only a few sage minds realized that the airplane had become a long-range naval weapon, that the dreadnought was no longer Mistress of the Seas, and that an amazing vessel to be known as an aircraft carrier would evolve from this historic experiment.

Hydrogen-filled dirigibles of the German Navy, although vulnerable to antiaircraft or machine-gun fire, had for nearly four years been

a grim threat to British cities and the civilian population with their persistent bombing attacks. They were also able to carry out long-range reconnaissance missions, a factor that long annoyed the Royal Navy, and according to some experts provided the intelligence that enabled the German Navy to escape from the trap that Admiral David Beatty had set up in the latter hours of the Battle of Jutland.

In 1918 antiaircraft fire was rudimentary, and, all factors being equal, the lighter-than-air dirigible could generally outwit the fighter planes by dumping bombs or jettisoning unimportant gear and supplies, thus enabling it by its inherent buoyancy to climb fast and evade chase.

A few Zeppelins had been destroyed by aircraft, but in most cases the contact had been made more through good luck than the capabilities of the plane or pilot. Another problem lay in the limited range of contemporary aircraft, as well as their inability to match the airship in gaining altitude. To counter these enemy advantages, Commander Sir Reginald Tyrwhitt of the British Harwich Force submitted the idea of improvising some form of launching platform from which the fighter aircraft could be flown at sea at the most favorable time.

Commander Charles Rumney Samson, a memorable and rather flamboyant character of Britain's Royal Naval Air Service, was the first to be approached with this idea. Samson was reckless, bold, breezy, and most energetic. Early in the war the Germans had put a price of \$50,000 on his head—dead or alive—since he had single-handed almost hounded them out of Belgium while in command of a small force of armored cars. He had been one of the first four British naval officers to volunteer for pilot training before the outbreak of war.

Having learned that naval flying boats had been hauled about the North Sea on lighters in order to extend their range of action, Samson decided that a small, light, high-powered aircraft could be launched from one of these platforms. The Sopwith Camel was chosen because it was powered with a 150 hp. Bentley rotary engine, a power plant of high efficiency in those days. The aircraft could climb to 15,000 feet in approximately twenty minutes while carrying two fixed machine guns or four light fragmentation bombs. It was presumed to have an endurance range of two and one-half hours, but there were many variables to be considered under such circumstances.

As was to be expected, Commander Samson decided to carry out the first off-the-lighter experiments himself. In his first attempt he re-

moved the wheels from the Camel and substituted a set of skids that were designed to slide along a pair of shallow troughs built into the deck of the lighter. In the first trial, the aircraft got off the deck successfully, but the Camel was too delicate of control for this ham-fisted exhibitionist, and she quickly spun into the sea. The aircraft was wrecked, but, as usual, the flamboyant one bobbed to the surface little the worse for wear. A short consultation with his staff convinced him that armored cars were more in his line and that someone who had had some deck-flying experience might handle the situation more successfully. A young Canadian, now a member of the newly created Royal Air Force, was selected.

Sub-Flight Lieutenant Stuart D. Culley (to give him his former service rank) was born in Nebraska in 1895, the son of a Canadian mother and an English father. In 1916 he enlisted in Canada and was accepted by the Royal Naval Air Service, but on completing his flight training in England, he was transferred from the light cruiser *Cassandra* to a shore base at Great Yarmouth. Up to that time his deck flying had been aboard early variations of primitive carrier decks built over the hulls of converted cruisers or liners. In these operations light Sopwith Pups (a forerunner of the Camel) were launched successfully but no deck landings had been carried out. The planes either landed on the surface of the sea to be picked up, or were able to return to some nearby land base. In a few instances, the landing gear was jettisoned to make these water landings less hazardous. Culley had had some experience in taking off from a seagoing platform, but flying a more powerful and very tricky aircraft off a platform only fifty-eight feet long and sixteen feet wide, was something else.

Culley went into the adventure with an open mind, but he wanted no part of the skid-and-trough idea Samson had contrived; instead, he retained the conventional wheeled undercarriage. A destroyer was to tow the lighter at thirty knots and at the appropriate moment one of the lighter's crew would start the engine by swinging the propeller. To offset any chance of his being blown overboard or sucked into the propeller, the mechanic was attached to the lighter deck by a safety belt and a cord that allowed him just sufficient reach to carry out the task. As soon as the Bentley was started, the mechanic pulled himself back by the safety line, unshackled the cordage and darted away to the shelter of the lighter's deck. The airplane itself was launched through a conventional bomb-release gear operated from the pilot's cockpit. Steel cables were attached to the ends of the wheel's axle

and run over simple claw pieces that allowed the plane to move forward freely at any time, but until Culley pulled the release toggle there could be no upward or backward movement. Strangely enough, this impractical arrangement worked perfectly.

On August 1, 1918, Culley made his first trial off Great Yarmouth. The towing destroyer was *Redoubt* and the lighter was worked up to about thirty-six knots before Culley released the Camel and found himself airborne with scarcely any run over the deck. Once in the air he turned away and eventually landed safely at a shore base.

It was agreed next that some modification in the plane's armament might be necessary, and the two Vickers .303 guns mounted to fire through the propeller were discarded and a pair of lighter Lewis guns were placed on suitable brackets that were bolted to the upper side of the top wing. In this arrangement they could not be lowered to change the drums of ammunition, and since each drum contained only 97 rounds, Culley went into action with a total of only 194 bullets. At this point Commander Samson issued a memorandum in which he outlined his views on the proper tactics to adopt in attacking an enemy airship. It was a very dogmatic order, typical of the rugged battler, but, unfortunately, it in no way fitted the conditions Lieutenant Culley was to encounter.

Five days later Commander Tyrwhitt, who was aboard the light cruiser *Curacoa*, took the whole Harwich force of four light cruisers and thirteen destroyers out to sea to carry out an offensive sweep in the southeastern sector of the North Sea. *Redoubt* again hauled the lighter and Camel fighter. Other destroyers towed lighters on which reconnaissance flying boats had been embarked, and cruisers of the force were burdened with C.M.B.s (coastal motor boats) that were to attack German minesweepers operating off the Dutch coast.

At dawn on August 11 the C.M.B.s were put overboard some twenty-five miles northwest of Vlieland and an attempt was made to launch the flying boats, but there was not sufficient wind to get them into the air. They had to be reloaded aboard their lighters and finally returned to the harbor waterborne. As a result six C.M.B.s that had hoped to be escorted by the flying boats, made their attacks off Terschelling but were intercepted by German seaplanes. In the action that followed three of the C.M.B.s were sunk and the remainder limped back to safety areas along the Dutch coast.

While this air-surface action was going on Samson, Culley, and the lighter crew left the destroyer's deck and prepared to launch the

Camel. It was reasoned that the Germans would investigate the activity of Tyrwhitt's force and at 8 A.M. the Admiralty had monitored a signal which indicated that a Zeppelin was cruising over the Heligoland Bight. Thus alerted, every man in the force searched the sky but Culley was the first to spot a great silver cigar cruising at about ten thousand feet. It was L.53, commanded by Kapitänleutnant Proell of the German Navy. It had flown out of Nordholz in northwest Germany early that morning to investigate this impudent intrusion by the Tyrwhitt flotilla.

Lieutenant Culley jumped into the cockpit of the Camel, and *Redoubt* worked up speed. A new factor of naval warfare was about to be introduced. A handsome young man was keeping a rendezvous with destiny. When the speed of the lighter had reached thirty knots, Culley checked his engine and gave Samson the conventional "thumbs-up" signal. At 8:41 the Camel leaped into the air. Members of the lighter crew declared that the plane had run less than five feet before being airborne. Culley climbed straight over the stacks of *Redoubt*, saw the whole flotilla spread out before him and realized that he was the leading actor in this historic drama. Probably no airman had ever played to such a breathless audience, but when he looked up again, the Zeppelin was nowhere in sight.

"Oh no! Please . . ." Culley pleaded to his gods.

But within a few seconds the silver airship reappeared and from that instant Culley, flying like an automaton, never took his eyes off the glinting gas bag. At five thousand feet she appeared to have changed very little—a disturbing thing—and the young flier gradually realized that the enemy was climbing fast. He remembered that Zeppelins of this "50" category were noted for their ability to gain height rapidly, but he stuck to his task, keeping a discreet distance from the airship. At fifteen thousand feet the controls of the Sopwith began to mush-out and become sluggish. The Bentley gave one disturbing cough, but soon picked up the rhythm. Culley struggled up to eighteen thousand feet at which time he was positive that the Zeppelin had altered course and was heading out to sea.

"I hoped she would try to scurry back to Germany," Culley said later. "I knew I would never head her off if she steered farther out to sea."

He continued to watch the airship, his hopes gradually dying until suddenly the light changed and he saw that the silver raider was heading directly toward him. He figured, as near as he could, that she was

a few hundred feet above his present level and approaching at a relative speed of one hundred fifty knots. He considered Samson's admonition to attack only from above.

"You must dive on her," his chief had ordered. "You must avoid any position behind or below the tail. Dive on her from above and then race past, just along her beam, to avoid any flames. If you fail in this method, dive on her from behind the port quarter. You will perhaps come under heavy fire so don't fire all your ammunition in the first attack. They are not likely to use the gun mounted on the top of the main frame, and you'll be able to get in closer by going in from above."

From Culley's position and judging the speed at which the Zeppelin approached, it was obvious that an attack from above and behind was out of the question; he had no choice but to attack head-on and from below. In a matter of seconds the great bulk of the Zeppelin loomed ahead. Culley could see the forward control car and the outboard engine gondolas, their propellers flailing like broadswords. For a short while he was spellbound by the gigantic spectacle, but as his eyes searched for some crew activity, his hand instinctively drew back on the stick, the nose of the tiny biplane came up and almost stalled.

Culley said later: "I can hardly remember doing all that, and I only came to when I realized I was attacking that great thing. One gun operated beautifully and fired its complete drum without slip-up, the other jammed after pooping off about half a dozen rounds. By then I sensed I was about to stall out so I leveled off and raced along under the massive belly of the craft and saw something either fall or jump from a slit in the framework and disappear below."

(This object was the only survivor from L.53, and his parachute descent from about nineteen thousand feet must have been a record for those days. The man was spotted later and picked up by a German destroyer.)

The instant Culley's guns stopped firing, and as the Camel faltered in her stall, she nosed down some two thousand feet before he could ease her out. During this time he lost sight of his target, but when he leveled off again and stared up he saw to his consternation that L.53 was cruising along as though nothing had happened. He turned to make an adjustment to his throttle to regain the lost altitude when a glint above caught his eye. At three widely separated points gushes of yellow flame cascaded from the gas bag and within a minute practically all of the airship, except the tail section, was enveloped. The giant

conflagration burned itself out in a few seconds, leaving a blackened skeleton floundering in the sky. A flag fluttered pathetically from a rudder post as L.53 started her final dive. Culley saw the airship writhe and break her back and finally hit the water. The clock on his instrument panel showed it was 9:41 A.M. Exactly one hour before he had become airborne from the bobbing lighter.

He had scored his "kill" but a new problem arose. Valor and training had been devoted to the destruction of an enemy raider; now it was time to consider the possibility of a safe return. He knew there would be a number of German seaplanes in this area and they had firepower, whereas one of his guns was empty, the other jammed. It was here that discretion replaced the spirit of valor. He opened the throttle wide, went into a fairly steep dive and headed for the area parallel to the Netherlands coast.

In a hurried arrangement, made just before he had bounced off the lighter, it was agreed that one of Tyrwhitt's ships would rendezvous with him in the vicinity of the Texel lightship, but whether this plan could be carried out was mainly a matter of luck. So considering everything, Culley studied a small-scale map he had brought with him and tried to locate some outstanding landmark, hoping to find the Texel light. While thus engaged, his engine cut out and he knew that he had used up the fuel in the main tank when struggling to get to the level of the Zeppelin. He switched over to a small reserve tank in an upper wing panel and throttled back, holding just enough power to remain airborne.

He probed his way through a light coverlet of offshore mist and thought he spotted a couple of Dutch fishing vessels, but once he had eased down into the clear he was overjoyed to see they were British destroyers, and another look told him the whole Harwich Force was in the vicinity.

Now he could pick and choose, but he selected the *Redoubt* which had towed his lighter, for he noted that they had stopped and were transferring the lighter's crew and lowering a whale boat. While these rescue arrangements were being made for him, Culley circled the rest of the force. During this triumphal circuit Commodore Tyrwhitt, who was thrilled by the result of this air action which he had originally conceived, turned to his Officer of the Watch and said, "Do we have anyone aboard who knows the hymn book well?"

The O.O.W. smiled and replied, "I used to be a choirboy, sir."

"Remember the hymn that begins with the words, 'O happy band of pilgrims'?"

"Of course, sir."

When the hymn book was found the commodore sent a general signal to his fleet, reading, "*Attention is called to the last verse of Hymn 224.*"

The verse in question was as follows:

*O happy band of pilgrims,  
Look upward to the skies,  
Where such a light affliction  
Shall win so great a prize.*

Since the day was Sunday, the ships' companies of the Harwich Force bellowed the hymn with unusual enthusiasm, and Sub-Lieutenant Culley was many months living down the "light affliction."

In the meantime he had put down the Camel so skillfully on the water, it was soon hoisted out with little damage and returned aboard the lighter. Some time later it was patched up and put on exhibition in the Imperial War Museum—where it remains to this day.

Culley was awarded the Distinguished Service Order, although many men who were closely involved felt that he should have been honored with Great Britain's highest military decoration, the Victoria Cross.

The whole undertaking was an excellent illustration of efficient co-operation between the Royal Navy and the infant Air Force, but one wonders now how many men in either service realized at the time the full significance of that first successful air interception by a ship-borne fighter aircraft.

The development of the aircraft carrier is a dramatic example of the old proverb "Necessity is the mother of invention." The military potential of the airplane, particularly in naval warfare, was realized by a few farsighted tacticians shortly after the Wright brothers gave the world its first heavier-than-air machine. The Dayton, Ohio, inventors also contributed a primitive catapult, the forerunner of the launching device used on today's carriers.

The airplane was at first employed only as a scouting weapon by both naval and military experts. Fleet commanders, in particular, liked the extension of visibility for their surface ships. No one considered the airplane a weapon of offense, and the idea of bombing large cities



or military establishments was, at the time, thought to be inhumane. The First World War had been under way for many months before the airplane became an aerial destroyer with machine guns mounted at available ports.

The flying boat and float plane were first used for naval-air operations because they could take off from or land on the water; that is they could under favorable conditions, but as their employment was extended special vessels had to be devised to accommodate and service them.

But there always were a number of handling problems connected with these frail machines that detracted from their tactical value. They took up too much valuable space aboard their tenders, they were difficult to handle aboard ship, to launch over the side, or to retrieve after a patrol flight had been completed, and because of their size and weight and lack of maneuverability were limited to simple scouting missions. They were no match for land-based aircraft, even though offensive armament was rudimentary and primitive. Their hulls and floats which gave them their primary ability to work with naval forces were their major hindrance.

What Navy men wanted was a light, long-range aircraft that could defend itself, scout out the enemy, take off from and land back on the mother ship; the last two qualities would save a tremendous amount of valuable time and, more important, allow the vessel concerned to keep station with its own flotilla or fleet. There would be no necessity to slow down to put the aircraft into the water, or to pick it up again. With the increased speed of surface operations, this was of prime consideration. If an aircraft could be launched from a vessel of war while she was under way and brought back again under the same circumstances, the art of naval warfare could be vitally improved.

The Wright brothers used a dropped-weight catapult to launch their first successful biplanes. This device produced one form of initial propulsion. The problem of a short-strip landing was partly solved by another American, Eugene Ely, a noted pilot of the Glenn Curtiss school who made the first known carrier-deck landing and take-off on January 19, 1911, aboard an early Curtiss "June-bug" biplane. Reconstructed versions of this historic plane have been seen at aviation shows over the past few years. It had a thirty horsepower engine, a six-foot propeller, and a tricycle landing gear. Ely, who wore a number of inflated bicycle inner tubes for safety, took off from the Presidio in San Francisco and flew out to the U.S.S. *Pennsylvania*, a cruiser of

that day, and landed on a short platform that was mounted over the stern of the deck.

The Curtiss pilot put down the biplane at about forty miles per hour and used a variation of today's hook-and-cable arrester equipment; a series of ropes with sandbags at each end were laid across two wooden rails that ran lengthwise along the landing platform. Suspended a few inches high, the ropes caught and held a trailing hook, and afforded the means of snubbing the forward speed, slowing down the plane, and limiting it to the short platform.

Later that day Ely's biplane was turned around, the ropes and sandbags removed, and he took off and flew back to the Presidio field. The landing-cable idea became the basis of today's very elaborate plane-snubbing system used by all naval carriers. But the U. S. Navy did not pursue the venture and the aircraft carrier, as such, was first developed by the British.

With the outbreak of war in 1914 the heavier-than-air machines had a hundred new situations to thwart. The early Royal Naval Air Service which was responsible for home defense and co-operation with the fleet performed these tasks as best it could with land-based wheeled planes, float planes, and flying boats.

British naval aviation can be traced back to 1908 when a new post of Naval Air Assistant was established at the Admiralty, but it was not until 1912 that heavier-than-air aircraft were seriously considered for naval operations. The general attitude toward any proposed carrier operations is best illustrated by a statement that appeared in a London aviation journal that same year. It read:

It is reported without any corroboration that Mr. [Lieutenant] Samson has the intention of alighting on the deck of one of the battleships at Sheerness. It is sincerely hoped that he will not make the attempt, for he is not only one of the most magnificent flyers in the country, but he is an exceedingly valuable officer and a man of considerable mental ability, and should not, therefore, be permitted to risk his life on what is, when all is said and done, simply a dangerous trick which though it may perhaps seem convincing to a few old-fashioned officers who do not yet realize even the present possibilities of the aeroplane, is actually of no practical value whatever.

The Lieutenant Samson is the R.N.A.S. officer mentioned in the beginning of this chapter.

But the young bloods of the Royal Navy had other views and sev-

eral stuck doggedly to their opinions and, disregarding a series of mishaps and tragedies involving their lighter-than-air craft—dirigibles and blimps—pushed their “impractical” plans with even more determination.

There were several reasons for this. On November 18, 1911, Commander Oliver Schwann, who later changed his name to Swann, made Britain's first successful take-off from the water while flying a thirty-five horsepower Avro biplane. The first such U. S. float-plane flight was made by Glenn H. Curtiss aboard a Curtiss hydro-airplane at San Diego on January 26, 1911, and Henri Fabre, a Frenchman was the first airman to take off from the water (1910) but he was unable to land on its surface. Fabre flew a *canard* machine in which the main planes were fitted to the rear of the body frame and had the engine mounted in what would be considered the center section. The pilot straddled the upper main body member, and sat facing the tangle of control surfaces. The floats were made of thin veneer and were formed into a hollow construction that was curved fore and aft like wings. They not only provided the lift from the water but also assisted in supporting the aircraft in the air. Fabre could take off from the water with these frail floats, but he had to land on a sandy beach or a meadow.

The question arises: Was this the first amphibian plane?

The famed Lieutenant Charles R. Samson of Great Britain flew a Short S.27 from an improvised deck built on the forecastle of H.M.S. *Africa* while she was at anchor at Chatham, and made a safe descent alongside, using flotation bags lashed to the wheels. But it was not until 1912 that the first real seaplane and the first flying boat made their appearance. The first British flight from a ship under way was made by a Lieutenant Gregory on May 9, 1912, aboard another Short S.27 biplane from the deck of H.M.S. *Hibernia* as she was steaming at ten knots in Weymouth Bay.

The friendly spirit of competition between the U. S. and British Navies did much to advance the progress of naval aviation. While the U. S. appears to have neglected her early success in deck take-offs and landings, some attention was given to the prospects of catapult-assist take-offs. Some experiments were made in 1912, but it was not until 1916 that an actual catapult, suitable for active service conditions, was fitted to U.S.S. *North Carolina*.

British naval aviation began to get into its stride by 1912 when a Naval Wing of the Royal Flying Corps was formed and naval prob-

lems considered seriously. By the end of that year the Royal Navy had sixteen aircraft in service, thirteen of which were landplanes; only three were so-called hydro-airplanes. That year, too, saw Lieutenant Samson drop a naval bomb from a Short biplane. Radio signals were also transmitted from a Short seaplane and by the summer of 1913 four shore stations, Calshot, Cromarty, Felixstowe, and Great Yarmouth were established. In July of that year aircraft for the first time took part in the annual naval maneuvers.

A notable feature of this period was the operation of two seaplanes from a wheeled launching platform mounted forward aboard H.M.S. *Hermes*. One of these aircraft, a Short biplane, was known later as the Short Folder since it incorporated a set of wings that could be folded back parallel with the fuselage. The Short firm, the oldest established designers and producers of airplanes in the United Kingdom, was founded by two brothers, Eustace and Oswald Short in 1898. Their output began with spherical balloons, and in 1908 when their elder brother Horace joined the firm they began to manufacture airplanes near Leysdown on the Isle of Sheppey.

The following year a Short plane won the *Daily Mail* prize of £1000 for a flight over a closed circuit by an all-British airplane. The Short brothers also became the British agents of the Wright brothers. In 1910, with a new factory at Eastchurch, they produced a series of biplanes powered with two engines, certainly the first multiengined airplanes ever built.

Short aircraft of varying types played an important part in the development of the Royal Naval Air Service. Its first pilots were trained on Shorts, and the early folding-wing seaplane became the forerunner of many carrier-based aircraft that were produced by other major powers. A Short seaplane was the first to carry a torpedo into the air and early in World War I Flight Commander C. H. K. Edmonds, while flying a Short seaplane, succeeded in torpedoing a Turkish transport in the Sea of Marmara. In the latter months of that war the Shorts produced their famed N2B bomber seaplane, the Skirl, originally designed as a torpedo carrier and later selected to take part in the 1919 transatlantic races.

All these experiments were interesting and afforded novel exhibitions for the Royal Navy, but the expansion of the German Navy already was being sensed and by July 1914 the Royal Naval Air Service had become an independent force with 52 seaplanes, 39 landplanes,

7 airships of varying value, 128 officers, and 700 ratings, or enlisted men.

As the threat of war spread ominous clouds over Great Britain during those memorable holidays of 1914, the Grand Fleet was gathered at Spithead for the annual royal review that, on this occasion, was to cover five days, from July 18-22. On the twentieth an impressive flight of naval aircraft flew in a V over the fleet and gathered crowds, giving the first public exhibition of formation flying. Then followed seventeen seaplanes, accompanied by four naval airships that cruised majestically above the review area.

This was the greatest display of fighting aircraft yet seen in Britain and it must have been most impressive since the precision of that early formation flying reflected the enthusiasm and skill of the adventurous men who flew those prehistoric machines. How all this had been welded into such a disciplined and cohesive force is not clearly known.

Because of the spirit and the interest shown, the planes in this display were dispatched on a tour of Great Britain, but by the evening of July 27 suddenly were ordered back to their home stations. On the twenty-ninth the Cabinet advised the Admiralty that since the Royal Flying Corps, as the military wing was now called, would accompany the Army when it was engaged abroad, the Royal Naval Air Service would take over the responsibility for the air defense of Great Britain, and that these duties must take precedence over the purely naval requirements of patrol and scouting.

Much of this had been foreseen and during the early weeks of 1914 the R.N.A.S. had been practicing fighting tactics over Chatham, an exercise in which two aircraft "attacked" the dockyards while six others played the role of "defenders."

On August 1 orders reached Eastchurch that all R.N.A.S. machines were to be kept tuned up, day and night, for instant action. The day for which these gallant men had been training had finally arrived; from now on the flights and maneuvers were to be carried out in deadly earnest.

When war broke out on August 4, it was soon evident that special ships were urgently needed to act as seaplane carriers and in September an old merchantman was hurriedly converted and named *Ark Royal*, commemorating another *Ark Royal* which served with honor under Sir Francis Drake against the Spanish Armada in 1588. This twentieth-century *Ark Royal* could carry ten seaplanes that were

launched from wheeled trolleys, as they were aboard the *Hermes*. This early carrier arrangement was so successful that three cross-Channel steamers—*Empress*, *Engandine*, and *Riviera*—were converted to accommodate four seaplanes each. Later an Isle of Man packet, the *Ben-My-Chree*, was added to this early carrier force—the *Hermes* was sunk by an enemy submarine off Calais on October 31, 1914.

These improvised vessels and their aircraft performed heroically during the early weeks of the war. On Christmas Day 1914 light naval forces out of Harwich, accompanied by *Engandine* and *Riviera*, steamed into Heligoland Bight to give the seaplanes a chance to bomb the airship sheds at Cuxhaven. The sheds were not located but the bombs caused some damage and confusion. However, this was chiefly a period of active development for the new sea-air arm; most of their duties consisted in routine fleet scouting operations. Although the "birds" were often in poor plumage and their engines were not too reliable, they hacked away and more than earned their keep. The *Ark Royal*, later named *Pegasus*, took seven float planes out to the Mediterranean to provide gunnery spotting, photographic reconnaissance, and infantry support for the early stages of the Gallipoli campaign, but since she had only ancient merchantman speed, she was vulnerable to attacks by enemy submarines that were beginning to appear in that area, and had to be replaced by the speedier *Ben-My-Chree*.

It was during this campaign that Flight Commander Edmonds made his historic torpedo attack. Flying at a height of fifteen feet, at a range of three hundred yards he attacked an enemy supply ship and immediately sank it. Samson, now a commander, also delivered a five-hundred-pound bomb with rare success and then tried to set fire to a Turkish position by dropping a twenty-gallon drum of gasoline that was fitted with an explosive charge. This effort was not successful since the liquid was too widely dispersed on impact to set up the necessary blaze.

Until 1915 all vessels that had been converted for flying purposes were designed solely as parent ships to seaplanes, but something new was about to hatch. That year another Isle of Man packet, *Vindex*, was provided with a sixty-four-foot-long deck forward to accommodate "fighters" as well as seaplanes. A successful flight was made from *Vindex* with a Bristol Scout on November 3, 1915. Again, this was a float plane, equipped with a set of wheels that were dropped as the plane left the deck; there was no effort to land back on, the seaplane simply

returned, landed a short distance ahead of the moving ship and was "hooked" by a derrick gear and "fished" aboard.

With this deck success, similar vessels such as *Manxman*, *Nairana*, and *Pegasus* were soon added to the naval air fleet. In each case the seaplane hangar was aft, the fighter hangar was forward, and the vessel was provided with a sliding roof, allowing the planes to be lifted direct to the deck; the beginning of the elevator principle used in today's modern carriers.

These minor successes inspired new ideas and Captain Murray Sueter, Director of the Naval Air Department, suggested that a large liner, fast enough to keep station with the fleet, might be equipped to carry from eight to twelve seaplanes, and to this end the old twenty-two-knot Cunarder *Campania* of twenty thousand tons, built in 1893 for the North Atlantic service, was purchased and turned over to Messrs. Cammell, Laird & Co. for conversion to a fleet aircraft carrier. A flying deck of one hundred twenty feet in length was built over the forecastle for single-seater fighters, and derricks, booms and other equipment for "hoisting out" and re-embarking the two-seater Short seaplanes, were installed. An armament of eight 4.7-inch guns and suitable storage for large quantities of gasoline were provided. *Campania* was commissioned by Captain Oliver Swann, the same Navy man who had made the first British take-off from water four years before.

In *Campania's* early trials and exercises with the fleet, the arrangements for hoisting out and re-embarking the seaplanes in an open sea worked well, but in heavy seas the light-powered seaplanes were not able to get off the water. One pilot who did take off successfully could not make radio communication with the surface fleet and the general idea was considered to be a failure. But R.N.S.A. pilots would not be discouraged. They planned to fly a light seaplane from the deck of *Campania* and on August 6, 1915, Flight Lieutenant W. L. Welsh took off aboard a Sopwith-Schneider seaplane after a run of 113 feet, using a wheeled trolley, when the vessel was steaming seventeen knots into the wind.

This was satisfactory from the point of view of the single-seater pilot, but by now naval aircraft were often two-seaters that carried a pilot, a radio-operator gunner and considerable communications equipment. This required a longer platform to get such an aircraft airborne and to accomplish it the foremost funnel of the ex-liner was removed and replaced by two narrow funnels, abreast, one on either side of the ship, allowing the landing platform to be extended ninety

feet farther aft between these two stacks. The foremast and navigating bridge were also removed—giving a hint of future carrier design—and the bridge was replaced by a light narrow gangway arched across the flying deck at a sufficient height to allow the seaplanes to pass beneath.

*Campania* was steered from beneath the flight, or flying deck, under a small hatch which was raised when flying was not in progress—a series of periscopic mirrors gave the helmsman a view ahead. Available records do not disclose how much normal vision was possible during flight-deck operations.

Below decks there was hangar accommodation for eight reconnaissance seaplanes and four Sopwith "Baby" seaplanes. At the stern of the vessel was a well about ten feet deep, sheltered by canvas screens eight feet high that held an inflated kite balloon that was often raised on a winch cable and used for immediate area observation, just as kite balloons were being employed on the Western Front.

Once all these alterations were completed, *Campania* rejoined the Grand Fleet at Scapa Flow on April 12, 1916. Exercises were restarted and the flying personnel gained much reconnaissance experience in the basket of the kite balloon, and in deck take-offs. In this period five R.N.A.S. pilots successfully flew the "Baby" seaplanes off while *Campania* was steaming at twenty knots. Apparently, everything was going well.

At this point a majestic foul-up occurred that deprived *Campania* of a glorious place in naval history.

On the morning of May 30, 1916, this seaplane carrier steamed out of the harbor to enable her aircraft to carry out a series of gun-spotting flights in co-operation with four surface vessels that had been ordered to engage in routine firing exercises. The kite balloon of the new Calquot type—one fitted with inflated stabilizer vanes—was much more efficient than the old *drachen* copied from a German observation balloon; it was more stable, could be flown in higher winds, and on this occasion was sent up to twelve hundred feet with four observer officers in the basket. The shoot was carried out, the balloon was hauled down, and *Campania* returned to her anchorage at Scapa Flow which was some five miles from the main fleet.

At 5:15 P.M. she dropped anchor and at 5:35 received a preparatory signal radioed to all ships of the Grand Fleet. About 7:00 she received a further order to raise steam for full speed, and by 9:30 *Campania* was ready to proceed to sea—and glory, but unfortunately, Cap-



tain Swann did not receive the executive order sent out at 10:54, and it was not for some hours that he was aware that the fleet had sailed. Once he learned the reason for the general departure, he weighed anchor and passed the outer boom defenses about an hour after the last ship of the fleet had left—as a result we have the universal disagreement as to who actually won the Battle of Jutland.

*Campania's* absence from the action was not detected until around midnight, and the commander-in-chief did not know until 2 A.M. that she had left Scapa Flow. Owing to the presence of enemy submarines and the fact that no destroyer escort could be provided, Admiral John Jellicoe ordered *Campania* at 4:37 to return to harbor, which she safely reached at 9:15 A.M. The British commander thus went into the Battle of Jutland without any aerial reconnaissance.

The Germans were assisted to some extent by ten L-type Zeppelins, although their actual role has generally been considered negligible. It is recognized that the failures Admiral Jellicoe suffered were due chiefly to his lack of knowledge as to the whereabouts of vital portions of the German High Seas Fleet at critical points in the battle.

How much assistance the aircraft aboard *Campania* would have given is a matter of conjecture, but had the operation of flying seaplanes from the flight deck, and the radio communication and the ships of the fleet equaled the efficiency attained some months later, there is no doubt that the pilots could have given the admiral valuable information.

Admiral Jellicoe's decision to send *Campania* back was probably influenced by the fact that immediate calculations showed that the seaplane carrier could not overtake the fleet. However, due to heroic efforts of her engine-room staff she was closing the gap at the rate of three knots, and it has since been agreed that, subject to no mishaps, she would have caught up with the main force several hours before the opening of the main engagement. Even her old kite balloon would have been a godsend. All the officers and men aboard *Campania* were keen to show what could be accomplished by her aircraft, and all were confident of success. Being denied a part in the great Battle of Jutland must have been a bitter disappointment.

It is interesting to note that on June 3, 1916, two days after the great naval battle, a two-seater reconnaissance seaplane, using a wheeled trolley, was successfully flown off *Campania's* deck for the first time. This accomplishment opened up new possibilities and radio communication improved immensely. But this seaplane-carrier was a

luckless ship. On August 19, 1916, when the German Fleet made a short sortie and showed some indication of doing battle, she had engine trouble and could not put to sea to take any part in the brief action. In contrast, a Zeppelin spotted the British Fleet in time for Admiral Reinhard Scheer to reconsider his rash move and hurry back to Kiel.

In February 1917 the Grand Fleet Aircraft Committee recommended that Sopwith Pup airplanes—light, single-seater landplanes—should replace the Baby seaplanes aboard *Campania*. These were useful little biplane fighters, powered by 80 hp. Le Rhone rotary engines with a top speed of 106 mph. They carried one fixed Vickers machine gun that fired under the control of a hydraulic interrupter gear through the propeller. This plane was an ideal mount with no vices and, at the time, most suitable for prospective aircraft-carrier work.

A few of these machines were delivered for development, and for these experiments, the device that had been used for supporting the tail of the seaplane at the commencement of the take-off to keep it at normal flying position, was replaced by a grooved tail-guide trestle. This arrangement was used subsequently by aircraft flying off light cruiser platforms and off turret platforms of battleships and battle cruisers. A large amount of experimental work was carried out aboard *Campania* that furnished valuable data when flight decks were fitted to other ships, such as *Vindex* and *Furious*.

By January 1918 *Campania*, which had contributed much to the development of the aircraft carrier, was released from the strength of the Grand Fleet and made a training ship for naval air operations. There was some talk of further experimentation with a more elaborate flight deck, but this was postponed until additional experience had been gained with H.M.S. *Argus*, another converted type that had started out as the uncompleted Italian merchantman *Conte Rosso*, being built in a Clyde shipyard. *Argus* was fitted with a 550-foot flight deck about sixty-eight feet wide, her funnels were trunked horizontally aft, and her bridge and navigation space were made compact and lowered so that *Argus* offered a true flush deck.

In 1932 Japan had four carriers with this trunked-funnel arrangement, *Ryujo*, *Kaga*, *Akagi*, and *Hosho*, and by 1937 *Hosyo* and *Ryuzyo*, also trunked-funnel ships, had been added.

*Argus* was never employed in war operations, but immediately after the war was used for extensive flying trials, during which time more

than five hundred take-offs and landings were made with only forty major crashes.

The remainder of *Campania's* career was spent in this training program and eventually she was lost in the Firth of Forth when one night during a gale she dragged her anchors and drifted across the bows of H.M.S. *Royal Oak* and went down.

The Royal Navy continued its interest in carrier work and, along with *Argus*, converted a battle cruiser into an aircraft carrier. This was known as H.M.S. *Furious* and came as close to the design of the modern concept of an aircraft carrier as one would expect to find in those early days. She had a 228-foot-long flight deck that was mounted over the stern half of the hull; she also had a variation of the offset bridge, and her speed of thirty knots enabled planes to be flown off, but the problem of flying back on was unsolved until August 3, 1917. On that day Squadron Commander E. H. Dunning made the first true deck landing with a Sopwith Pup. It was accomplished by skidding to a stop, rather than relying on any built-in arrester gear, but in trying to repeat the performance two days later a wheel tire burst, the Pup rolled over the side, and Dunning was lost.

After this accident, further study was made of an elementary arrester gear, and a rope-net buffer was erected to protect the bridge. *Furious* was also the first carrier that was equipped with elevators to lower her aircraft to the hangars below. Over the postwar years she contributed much to the science of carrier work and was reconstructed five times for various reasons before she was scrapped in May 1945. Her sister ships *Courageous* and *Glorious* also went through many design changes until they evolved as island-type flush-deck carriers.

Other conversions during the last two years of the war were *Vindictive* and *Eagle*, the latter had been laid down originally as a battleship for Chile and was to be known as *Almirante Cochrane*. She was the first true "island carrier" since her two funnels, bridge, and masts were shifted over to the extreme starboard side, and until her end in August 1942 when she was torpedoed by the German submarine U-73 while escorting a convoy in the Mediterranean, she was one of the best-loved carriers in the Royal Navy. About the same time a contract was placed with Armstrong-Whitworth for the first British carrier to be built from the keel up. This vessel was called H.M.S. *Hermes*, but neither she nor *Eagle* was ready for launching before the end of the war; much of their construction was delayed until *Argus* had been

given many practical trials. Both new carriers were then fitted with the now accepted bridge-island mounted on the starboard side.

The above relates to the varied efforts made by airmen of the Royal Navy to bring the American-invented airplane and the American idea of shipboard landing operations to practical use in actual warfare. It is true that World War I saw no real aircraft carrier operations as we know the science today, but the endeavors that were attempted did clarify many of the problems. The idea of a flush deck, unimpeded by a bridge or funnels, was conceived. Variations of the arrester gear were developed, and the Battle of Jutland pointed up the necessity of aircraft reconnaissance and aircraft-to-surface-ship radio communication. It became obvious that the airplane would have to be designed especially for deck operations and the limited stowage space available. Equally important, air crews would have to be trained in naval operations as well as the art of flying a heavier-than-air craft. Much of this came about as the result of the dogged determination of "a few" and eventually Great Britain had a special Fleet Air Arm; after which the United States gave its naval aviation a second look.

Probably the greatest impetus to the development of carrier aviation in the U. S. Navy was Brigadier General William Mitchell's flamboyant bombing exhibition that proved for all time that the airplane carrying the proper armament could sink a naval battleship. This was carried out July 21, 1921, when a small formation of American bombers led by Mitchell sank the *Ostfriesland*, a former German battleship, in a test off the coast of Virginia and before a very critical audience of naval experts. Few wanted to believe what they had seen, but there were one or two who muttered: "Well, maybe Congress will give us a few dollars to develop an aircraft carrier. We sure need one after that exhibition."

Many new concepts of naval action were shown in the Battle of Jutland. Although few men would admit it at the time, the day of the dreadnought or battleship was over. Design had not kept pace with gunnery or modern explosive, the submarine, or at least the threat of the submarine, upset old-line planning and strategy, weapons outranged reconnaissance, and the admirals were blind beyond the limited scope of their scouting destroyers and battle cruisers. Although *Campania* and the Zeppelins were denied a vital role in this battle, it was soon evident that either side might have scored the greatest victory in

modern naval history, could it have been known what was going on in the important areas of the conflict.

A most intricate vessel was in the offing, a new man-of-war that carried weapons of a range never known before—naval aircraft—a floating airfield that some quarter of a century later would win great naval battles without either fleet commander seeing the other's forces.

American contribution to the science of carrier warfare makes a splendid chapter in naval history. Eugene Ely had shown that an airplane could land on and take off from a modern naval vessel. In 1916 another aircraft was catapulted from U.S.S. *North Carolina*, making that vessel technically an aircraft carrier, but nothing in particular was attempted during the war years of 1917-18. After the war, and with the honor of first flying the Atlantic going to a U. S. Navy N.C.4 team in 1919, it was obvious that more attention would have to be given to the naval side of flying. Although funds were limited and six sea-plane stations were closed, the collier *Jupiter* was put under conversion for carrier work, renamed U.S.S. *Langley*, and commissioned in March 1922.

This historic vessel might be considered the first successful aircraft carrier since she was properly equipped with an arrester gear that permitted aircraft to land aboard her, even under most severe weather conditions. She performed ably, and great strides were made in carrier operations. The catapult, first operated successfully aboard *North Carolina*, was now standard equipment on battleships and heavy cruisers that launched a specialized type of float plane. But when *Langley* began fleet operations the catapult proved to be somewhat inadequate. Only a few aircraft could be carried aboard battleships. They could be launched under almost all conditions, but had to be retrieved from the water on their return. On many occasions they were damaged severely if the landing was made in rough water, and since the mother ship had to slow down to make the pick-up, she became an excellent target for torpedo attack.

The aircraft flown from *Langley* were up-to-date land types of higher performance, and when it became evident that a torpedo-carrying plane was to be the prime weapon of the aircraft carrier, the landing-deck vessel came into its own. No catapult system that could be erected on a battleship could accommodate an aircraft capable of carrying the naval-air torpedo. It was largely through the desire to take the dive bomber and torpedo carrier to sea with the fleet that the

United States and British Navies brought the aircraft carrier to such a peak of performance.

Catapults, capable of launching aircraft of various types, had been mounted aboard most of the battleships of the United States Navy by the time *Langley* started operating with the fleet, but they compared in no way with the flexibility of action experienced aboard this early carrier. The float planes could not be landed aboard their mother ships after a patrol or reconnaissance, but had to be hoisted aboard and returned to the catapult mount by an elaborate derrick system.

*Langley* soon proved that any major power would have to pursue a strong policy in that particular field of naval operations, and between 1927 and 1940 eleven such vessels were built and commissioned, but only seven were in actual service when the Pearl Harbor attack brought the United States into the Second World War. *Saratoga* and *Lexington*, practically sister ships, were launched a few months apart in 1925 but were not completed until the early winter of 1927. For those days, they were massive vessels, each weighing 33,000 tons and accommodating ninety aircraft. Their original cost was about \$45,000,000 each. They had been authorized for construction as battle cruisers of 35,300 tons in 1916 and were to have seven funnels and boilers dispersed on two deck levels, but after World War I, as a result of experiences gained, these plans were largely revised.

As aircraft carriers, their tonnage was reduced by 8500 tons, mainly through the sacrifice of eight sixteen-inch guns in four twin turrets, and their mounts and armor. Other than this, most original features were retained. A flight deck was set up and the island superstructure added. Aircraft were handled on the 880-foot-long platform and a landing net was stretched behind a T-shaped elevator in the aft section. Another such elevator was abeam of the island, and a powerful catapult was set into the forward quarter of the deck. Recovery of aircraft was much as it is today; the incoming plane flew up to the lip of the deck and was arrested through its hook and a series of arrester-gear cables. Any planes that failed, through a malfunction of the gear or breakage of the hook, were caught in the landing net, thus protecting other aircraft parked in the middle or forward sections of the deck.

U.S.S. *Ranger*, a 19,900-ton carrier was launched in February 1936 and completed in the summer of 1937, and carried eighty aircraft. *Enterprise* was launched April 4, 1936, *Yorktown* was completed April 4, 1929, and *Wasp* in January 1940. *Hornet*, which carried General

Jimmy Doolittle's B-25 aircraft for the first attack on Tokyo, was launched September 25, 1939.

Once the Second World War was under way, the carrier program gained amazing impetus; during the hostilities seventeen fast *Essex* class, and nine light *Independence* class flat-tops reported for duty. One hundred fourteen escort carriers followed in the wake of the pioneer *Long Island*, including thirty-eight that were turned over to the British Navy. The history of many of these gallant vessels will be presented in later chapters. Four of the seven original CVs (large attack) carriers were lost in early actions, one light (CVL) and six escort (CVE) carriers went down in thrilling engagements. Twelve of the larger carriers and several escort ships received heavy damage. Many that were struck by bombs, torpedoes and kamikaze attacks went on fighting, a few limped back to the United States for major overhaul, but eventually returned to take their share of the battle.

The naval personnel concerned deserve unlimited praise for at times they were called on to fight with outmoded or at best, transitional weapons. The men who served aboard our early carriers needed unbounded courage, dedication, and adaptability since they were operating from a complex, ungainly, and vulnerable base. The handicaps under which most carrier airmen fought can best be realized from their operational airplane losses. It has been pointed out many times that more Navy planes were lost through mechanical failures, take-off and landing accidents, and other operational losses than in actual combat.

France also took an interest in the aircraft carrier, her first effort being the *Béarne* that had been originally laid down in 1914 as a battleship of the *Normandie* class. During the First World War construction was suspended and she was not launched until April 1920. Redesigned as a fleet carrier, work was started at La Seyne in August 1923 and completed in May 1927. She had a displacement of 22,146 tons and a full load of 25,000 tons, and on her trials she put on 21.5 knots with 40,000 hp. The *Béarne* was planned to accommodate more than forty aircraft but less than one fourth of these could be handled on the deck at one time. She had a spotty career in World War II and so far as is known was never used in active operations.

The *Joffre* and *Painlevé* were laid down some time in 1938-39 but neither vessel was completed before the Germans occupied France and took over the Penhoët yard where these ships were being built. How far the hulls had progressed is not known.

The German Navy laid down two aircraft carriers. The first, named *Graf Zeppelin*, was launched and was in process of fitting out when the war started in 1939. She was rushed out of her dockyard and moved to Gdynia, Poland, where she was captured later by the Russians. The second vessel, never named, did not progress far beyond the keel-laying stage, and is believed to have been destroyed in dockyard raids by the R.A.F. Both vessels were to have been 19,000-tonners, carrying only twenty-five aircraft.

Japan furnished something of a surprise in World War II when she produced seven first-class fleet carriers by 1940. These were *Soryu*, *Hiryu*, *Shokaku*, *Ryuzo*, *Kaga*, *Akagi*, and *Hosho*. To some extent this lineup was a grim embarrassment to Allied Intelligence, for as late as December 1941 the impression was that the Japanese Navy had only four carriers—there was no information concerning their Zero fighter. Only Sir Winston Churchill seems to have had any basic knowledge of Japanese strength in carriers and of the capability of their fighter aircraft. At the same time American aviation experts were proclaiming that the Brewster Buffalo fighter plane was the most powerful aircraft of that class in the Orient. As things turned out, the Buffalo was cold meat for the Zero fighters.

In the early 1920s naval rivalry was an accepted status of Japanese-American relations. At the Washington Conference in 1921 Japan had held determinedly for a fleet ratio of seven to ten, as opposed to the United States view of "non-menace and non-aggression," in which we based our stand on the principle that the relative strengths of the two navies should be such that each could defend itself successfully against the other, but neither would attack or menace the other.

At the time naval experts agreed that in modern fleet warfare an invading force would have to be 50 per cent stronger than that defending. Under the seven-to-ten ratio demanded by Japan, the U. S. Navy would have had only a 43 per cent margin of superiority, not quite enough to wage an aggressive campaign. The conference, however, adopted a three-to-five ratio applicable to capital ships, meaning battleships, completely ignoring aircraft carriers which at the time were considered a nautical novelty.

How quickly the lesson of the Battle of Jutland was forgotten.

This three-to-five ratio gave the American fleet a 67 per cent margin of superiority in the battleship category that from the standpoint of the Japanese admirals made it a menace to Japan. They turned their



attention to developing superior vessels for defense operations, and what better vessel for that purpose than the aircraft carrier? The 42,000-ton battle cruiser *Akagi* was immediately converted to a flush-deck carrier.

By 1930 the London Conference extended the limitation of naval armaments to categories other than capital ships. Again, Japan insisted on a seven-to-ten ratio in global tonnage of non-capital ships, and again her request was turned down.

Blocked at every turn, Japan refused to renew the naval limitation treaties on their expiration in the latter part of 1936. Earlier that same year we had enacted the Vinson naval expansion program to meet the changing conditions in Europe and Asia. Actually, the U. S. Navy was not up to treaty levels, but Japan was. Thus prior to the threat of the Vinson program, Japan had some sense of security, but if this program was completed the U. S. Navy would have the 67 per cent margin of superiority so dreaded by Japanese strategists.

As soon as the naval limitation treaties lapsed, Japan inaugurated her new *Marusan* program which placed greater stress on building special, superior type ships and armament to offset numerical inferiority. These included *Yamato* and *Musashi*, then the world's largest and most heavily armed battleships. Only a few farsighted Japanese officials saw the fallacy of this and pushed for naval air power, pointing out that the new naval armament policy was wrong, that it had not kept pace with the radical change in methods of warfare, that the idea of outbuilding the potential enemy in battleships was not realistic—in the future aircraft would be the decisive factor and air warfare would be total warfare that would require the complete mobilization of all national resources and activities.

As events turned out Japan decisively defeated her Anglo-American enemies for more than six months, but when her national resources were depleted and her national production broke down, she had nothing left with which to fight. Before the Pacific war was over the United States had built, not dozens of aircraft carriers, but more than one hundred carriers of the attack and escort class.

Aircraft carrier development in Japan took on some interesting aspects. From the beginning, with the building of *Kaga*, *Hosho*, and *Akagi*, they ignored all traditional design. Since the vessels were to provide a seagoing flight deck for naval aircraft, they were just that. Masts, bridge, and funnels were eliminated; the flight deck was all-important. Navigation was carried out from a bridge set below the for-

ward lip of the deck, the funnels, as stated before, were trunked over the side and aft, and what mast structure was needed was built to be raised or lowered between deck operations. These vessels looked more like oversize barges, but they were most practical. Even in 1932 these carriers were capable of twenty-five knots, carried ten 8-inch guns, four 4.7-inchers and twelve 4.7-inch antiaircraft weapons.

The *Amagi* which was laid down at the Yokosuka dockyard and launched late in 1923 was so badly damaged by the earthquake and fire in September of that year she had to be abandoned before she was fitted out for fleet operations. The hull of *Kaga*, originally a battleship, was appropriated to replace her, and in this vessel we first note a curved trunking of the bank of funnels, designed to carry smoke and thermal eddies well clear of the flight deck. From the traditional point of view, it was not impressive, but it was very practical. Aboard *Hosyo* the smoke was dispersed through three circular funnels that could be tilted over the side or held erect along the starboard side, another interesting twist in carrier design.

The growth and initial success of the Japanese carrier force must be credited to Commander Minoru Genda, a brilliant young staff officer who was aide to Rear Admiral Takijiro Onishi, then Chief of Staff of the Eleventh Air Fleet. Commander Genda had begun his naval career as a fighter pilot and his success in that duty had won for him and his units the nickname, Genda Circus. The young commander, however, was more than a skilled flier, he was also an air tactician of no small stature. As operations officer of an Air Group that operated in the Shanghai area in 1937 he had introduced several new methods for mass, long-range missions by fighter aircraft. Later, after graduating with honors from the Naval War College, he served for two years in London as Japan's assistant Naval Attaché for Air, where he gained experience, poise, and broadened his service viewpoint.

Commander Genda contributed much in the realm of air tactics where mass employment of fighters gained control of the air in co-operation with their bombers, and these tactics were introduced in the concerted use of several carrier task groups in a single tactical theater. These new methods were applied so effectively in the opening phase of the Pacific war, they were known in American aviation parlance as "Gendaisms."

Genda made an exhaustive study of the proposed attack on Pearl Harbor to determine if it could be carried out successfully, and came to the conclusion that it could be attempted if at least six of the Fleet's

large carriers were assigned to the operation, that special care be taken to select only the most competent commanders and skilled flying personnel, and, above all, complete secrecy maintained to ensure the advantage of surprise.

Admiral Isoroku Yamamoto was then convinced that a carrierborne air assault on Pearl Harbor was sound and his Combined Fleet pushed ahead with their plans.

The Japanese Naval General Staff did not agree, saying that the proposed operations in the southern waters designed to gain control of fuel oil centers were more important than a raid on Pearl Harbor, and insisted that the main carrier strength should be allotted to the force designated to the Dutch East Indies area. Most Japanese strategists had long held that any attack on Pearl Harbor was a gamble, with success depending entirely on taking the United States forces by surprise. If no such situation stood, the attack would fail with disastrous consequences. They argued that to take valuable carriers so close to an American base was too risky, for even a large carrier could be quickly and effectively disabled by a few bomb strikes.

However, younger enthusiasts on the staff continued to stump for a complete air attack on the Hawaiian base, and pointed out that the U. S. Pacific Fleet was the bulwark of Allied strength in the entire Pacific area and its destruction should be the main objective of Japanese strategy. If the bulk of it could be destroyed, the conquest and exploitation of the rich oil fields would be an easy task.

Although he had shown reluctance to go to war with the United States, Admiral Yamamoto stated firmly that if he were to be responsible for Japanese naval action, the Pearl Harbor plan as he had drawn it up would have to stand. He even agreed to take command personally of the Carrier Striking Force, and with this statement won his point just thirty-five days before the Pearl Harbor attack was delivered.

On that decision in the opening phase of the Pacific war, the old concepts of the dreadnought era came to an end; the carrier had taken over the role of the battleship and the new watchword was "Attack!"

While the United States and Japan played their deadly game of naval chess, Great Britain, having laid the foundation for the development of carriers and carrier operations, plodded away, hampered by the limitations of national economy and the widening spread of pacifism. It was no longer fashionable to turn up at formal dinners in dress uniforms wearing the decorations of previous service. Those who

talked of war or national defense were "rattling the rifle bolt," and every move or gesture made to improve any of the three services, was howled down by the antimilitant crowd that had taken the upper hand in Parliament.

Naval building was restricted, due to the tenor of the times and the Washington Treaty, so no new British carrier was laid down until 1935! This was another *Ark Royal* of 22,000 tons, sent down the slipway on April 13, 1937. She had a flight deck eight hundred feet long and ninety-four feet wide, into which were fitted three elevators, and eventually a complement of contemporary aircraft such as Fairey Flycatchers, Fairey III-Fs, and Blackburn Darts, the latter a bulky but valuable torpedo carrier. The Flycatcher was a biplane fighter, the III-F a reconnaissance plane.

In the meantime *Courageous* and *Glorious*, sister battle cruisers of *Furious*, previously mentioned, had been converted and were available with seven-hundred-foot flight decks and an up-to-date island. It was upon these three vessels that the steel cable arrester gear was first evolved and brought to a high degree of success. In 1919 *Courageous*, with a battalion of infantry aboard, was ordered from Malta to Jaffa at full speed to assist the Palestine police. Its complement of Flycatchers, Darts, and III-Fs, thirty-six aircraft in all, was flown off to the civilian airfield in Gaza from where they did a great deal of flying for about six weeks, but fired not one shot nor dropped one bomb.

As the years moved on and the Hitler situation worsened, a respectable building program was drawn up. Four new ships, *Illustrious*, *Victorious*, *Formidable*, and *Indomitable* were laid down in 1937, and two more, *Implacable* and *Indefatigable*, the following year. Britain's new Fleet Air Arm was now completely under control of the Admiralty. Not yet fully developed or equipped for its many tasks, it entered upon a war that was to more than justify its existence as an integral part of the Royal Navy.

In order to better appreciate some of the action details to be related, it may be well for the lay reader to understand how the aircraft carriers of World War II operated.

The chief objective of these vessels was to carry aircraft to sea and furnish operational areas, shelters, and servicing. During naval operations it was important that they carry as many planes as possible, and handle them as efficiently as they would be on a land base. Although most aircraft usually were accommodated on the flight decks, many

were taken below on elevators to sheltered hangar decks where maintenance could be performed under more comfortable conditions. There, too, were specialist shops and tool-room facilities, and controlled lighting.

Carrier operations developed and improved with the appreciation of the various problems encountered, in turn demanding changes in carrier design. Originally, the carrier simply dispatched or took aboard early float planes or flying boats, but naval development demanded more agile, speedier, and more adaptable aircraft. The wheeled-undercarriage, or land-type plane fulfilled this requirement and brought about the flight deck and arrester gear.

In early missions it was the practice to clear the deck after each plane had landed by lowering it to the hangar deck below. In some instances this took time and there was always the danger that a plane short of fuel or under some other emergency would attempt to land while the elevator was below the level of the flight deck. This could be disastrous. Early American practice evolved the system of parking each plane, as it landed, well forward, presuming each incoming aircraft had been properly snubbed to a halt by the arrester gear. Aboard the early *Saratoga* and *Lexington* a safety curtain of heavy webbing or metal mesh was erected in case the landing plane snapped the snubbing cable. This procedure left the deck elevators free to lower aircraft to the hangars without interrupting the landing-on process.

In the British and French Navies the incoming pilot had a clear uninterrupted deck ahead of him, and if he was dissatisfied with his final glide, he could take off again without danger to any other aircraft. In this case he landed normally while the carrier was steaming into the wind, and came to a halt by the use of his wheel brakes. When carrier planes could be landed at sixty knots on a carrier that was providing a thirty-knot "headwind" this was simple, but as the landing speed of aircraft mounted with the increase in their weight, this type of deck landing had to give way to the arrester gear, and some time before the Second World War all modern navy carriers were operated in that manner.

The next problem was the disposition of the bridge and smoke funnels. In some early designs the bridge section was lowered to the level of the flight deck, but this brought on many complications that could not be tolerated under war conditions. Smoke stacks also gave the designers trouble and although they were trunked over the side, or aft to the stern where the gases were discharged by fans, none was com-

pletely satisfactory, so the island feature was designed in which all bridge accommodation and smoke funnels were built into this compact structure. The unit was streamlined to eliminate dangerous eddies or turbulent air.

To carry out routine operations, the carrier was steered into the wind and the planes were sent off one at a time to rendezvous in some prearranged area aloft. Special deck crews, wearing colored jerseys or shirts to designate their particular roles, took care of the varied duties necessary to carry out these intricate operations. Some men were armament specialists, others did nothing but attend to fuel and lubrication problems. There were instrument specialists, and others who took charge of the actual flight deck during take-offs and landings. All these duties had to be performed with speed, precision, and care, for everything aboard the carrier and the aircraft had to be in smooth working order if the operations were to be carried out safely.

The landings were particularly complicated and only highly skilled pilots were selected for carrier work. Practically anyone could take off from a carrier deck, but getting back on required skill, precision, and, above all, strict service discipline to carry out the required orders of the flight-deck officer who was in full control of every carrier landing. This individual had to be a very experienced pilot, one who knew every condition the incoming airman might encounter. He had to make split-second decisions, or a deck landing might turn into a tragedy.

Once the incoming pilot had moved into his position aft of the speeding carrier, he assumed he was simply making a routine landing, and when he was within a certain distance of the lip of the carrier deck, his main job was to obey the signals being given by the flight-deck officer who stood in a clear position with colored bats or paddles in his hands, with which he advised the pilot of his position relative to the flight deck and "brought the aircraft in." All the various levels at which the paddles were held meant something definite to the incoming pilot; he would be warned if he was approaching the deck too high, too low, or too fast. If it was obvious that the approach threatened a dangerous situation, a possible deck crash, the flight-deck officer waved the pilot off with a definite paddle signal that could not be misunderstood. With that warning the pilot opened his throttle, banked away, and went around for another try.

In war few landings were waved off, as there was not too much

time to be wasted, and pilots usually made it the first time. Time was of the essence since in these operations the carrier in steaming into the wind would naturally have to leave her station in the main fleet formation. This put her in a vulnerable position to be attacked by enemy submarines whose skippers, knowing the routine of steaming into the wind, could take up an attack position and simply wait for the carrier to move there and be torpedoed.

This is one of the chief weaknesses of the aircraft carrier—the necessity to steam into the wind in order to recover her aircraft, and although strong destroyer-escort defense can be supplied, they have little to work on since the enemy submarine is probably lying at rest, awaiting the arrival of the carrier and there is no cavitation or other sound for the destroyer sonar equipment to detect.

These were the conditions aboard aircraft carriers up to the close of World War II. More improvements have been devised and added, new equipment developed and jet-powered aircraft of unusual speeds and weights accommodated. These developments will be taken up in detail in succeeding chapters.

To the layman the stormy weather encountered by the early exponents of naval aviation must be bewildering. With our hindsight we can see that carrier aviation simply had to come, and why anyone would put blocks in its path, is difficult to understand. Hindsight also tells us that it was something more than just developing a ship that could accommodate landplanes that would furnish air cover and increase the range of naval strike operations.

If we go into this history we will discover that it was the torpedo, the same weapon that provided the punch for the submarine, that laid the first keel for the aircraft carrier. The float plane that could be catapulted, and the flying boat that could be launched and recovered by a derrick, could carry out routine reconnaissance and in a small way fight other aircraft with machine guns, but these aircraft could not destroy enemy surface ships. Only the ubiquitous torpedo could strike that killing blow.

But what airplane of the early days could carry a 1000-pound torpedo and still fit the deck and hangar limitations of the proposed carrier? The aircraft bomb was out of the question since it had to be just as heavy, and perhaps heavier, to pierce an armored deck. The plane that would carry a heavy bomb to any height for such attacks could

not land on or take off from the deck of a carrier—the arrester gear had not been perfected. Up until several years after the end of World War I carriers, at least the British version which were years ahead of anything known, could accommodate light single- or two-seater fighters that were sent into the air to shoot down other fighters—or Zeppelins—but other than a few 25-pound Cooper bombs for fragmentation delivery, high-level bombing and torpedo attacks were out of the question.

What had to be done was to build more powerful aircraft, possibly with twin engines and folding wings to fit aboard the carrier hangars. But there was no money for such experimentation and development. All the former belligerents had cut down on military spending and what funds were available were being doled out to each service while the proponents of each grumbled at the manner in which these funds were being allocated.

The aviation people argued that all surface fleets were obsolete, or would be if funds could be made available for a few heavy bombers. In the United States, General Billy Mitchell was advocating a strategic bomber force, just as Major General Hugh Trenchard had in Great Britain. All kinds of fantastic statements were made by all parties. The U. S. Army, which presumed to control its Air Force, was somewhere in the middle clamoring for tanks and armored vehicles. The U. S. Navy, because of the success of the N.C.4 in making the first flight across the Atlantic, was convinced that bigger and better flying boats were the answer to its aviation requirements. If the admirals wanted immediate reconnaissance, a few float planes on cruiser and battleship catapults would do the job.

This sort of thing was going on on both sides of the Atlantic. Both Britain and America were “Big Navy” conscious, and these naval traditions were long-lived with deep roots. The bomb versus battleship controversy raged almost from the close of World War I and was to mar happy interservice relations for many years.

As we know now, General Billy Mitchell proved a point in 1921 when after months of wrangling he forced Washington officialdom to stage a test of the airplane versus the battleship. Anchoring an old Jutland veteran, the ex-German dreadnought *Ostfriesland* off the Virginia Capes, he did succeed in drilling it with several bombs dropped from Army bombers. It wasn't much of a test, but it was impressive at the time, and when the ancient target went down, a few old Navy



officers on hand to witness the display wept. Several more alert naval minds smiled and said, "Well, that ought to do it. They'll have to develop the aircraft carrier now."

The exhibit rocked the military world. In Britain, General Trenchard, long the stormy petrel of London's Whitehall, was still stumping for a truly independent air arm, one that was free and clear of the Navy. He had noted that the Royal Navy, giving an inch here and there, had demanded a Fleet Air Arm—a truly naval aviation service to be controlled by the Navy. The new Royal Air Force was to have nothing to do with this; it was to be a service trained in the practices and problems of naval operations. The old guard was actually providing air cover for its beloved battleships. This was the same naval service that in World War II did not build one Fleet (large) aircraft carrier. It relied on what had been built after World War I, or were on the stocks when war broke out. At the same time it built three battleships—*Anson*, *Howe*, and *Vanguard*—none of which took an active part in the hostilities.

In order to settle the bomb-versus-battleship dispute in Britain, another trial was arranged and staged in 1923 in the hope that it would have the same effect as had General Mitchell's in America.

Among the number of naval crocks being relegated to the reserve was the battleship *Agamemnon*, a 16,500-tonner that had been launched in 1906. She had performed yeoman service at the Dardanelles in 1915, and although outmoded, was considered suitable for such a test. *Agamemnon* was equipped with a radio control steering set, and she went to sea under these conditions minus a crew. Although a large number of interested observers were taken along, the test itself was kept a deep secret for years.

Two aircraft that belonged to the R.A.F. were selected to make the attacks, using practice bombs to be dropped from eight thousand feet. (Mitchell's display was flown at seventeen hundred feet.) One of these aircraft had to drop out with mechanical trouble, and the antibomber exponents were conceded a 50 per cent victory. The second plane made its scheduled attack with the bomber-navigator "steering" the aircraft to the target with pieces of string tied to the pilot's ankles. In spite of this hurried improvisation, the results were most impressive. Of eight bombs aimed at the moving target, two scored direct hits, and the remainder fell as near misses that would have caused considerable underwater shock-wave damage, just as a depth charge springs rivets in the hull of a submarine.

It is ironic to think that Generals Mitchell and Trenchard, who had fought so hard to keep strategic bombing for their land-based air forces, should have unwittingly provided the very evidence that was to result in great naval carrier forces for both of their countries.

## CHAPTER II

### TEMPERED IN BATTLE

THE GRIM test of the aircraft carrier began with the outbreak of the Second World War. Over the years, prior to Hitler's attack on Poland, the carrier had become the picture ship of the navy. She was large, majestic, sleek, and clean and was always the favorite when the fleet was in and visitors were welcomed aboard. She had space, elbow room, vast wardrooms, ample companionways, and best of all, a great variety of modern fighting aircraft. Few of the visitors were told that any naval force venturing within range of shore-based aircraft was doomed unless it had a fighter escort in the sky. Even the best of carrierborne aircraft are at a disadvantage; should their carrier be sunk or their deck made untenable, their floating airfield is gone.

World War II proved that the aircraft carrier was vulnerable; her long flight deck and large above-water hull provided an excellent target for air, surface, or submarine attack. Shortly after hostilities began the British Navy had severe losses in its carrier forces. On September 3, 1939, there were eight carriers at sea, and there was a strong belief that whatever the strength of the British Army or the R.A.F., the Royal Navy could immediately more than hold its own against the German pocket-battleship force, or any U-boat threat Admiral Karl Doenitz might contrive.

. *Ark Royal* and *Courageous* were with the Home Fleet, *Glorious* was in the Mediterranean, and *Eagle* on the China Station. The old *Furious* was still being used in carrier-deck training in the Firth of Forth, and later on assumed the ferrying of aircraft, and Atlantic convoy duty. The *Hermes* was first used in surface operations against enemy submarines in the home waters, and later for trade protection and raider tracing in the South Atlantic. *Albatross*, an Australian-built

seaplane carrier, and *Argus* were in home waters, but *Argus* was transferred later to the Mediterranean for training duties, and *Albatross* to West Africa on trade-protection duty.

*Courageous* was Great Britain's first carrier loss when she was sunk by an enemy submarine during the first month of the war. This came about indirectly through the loss of the liner *Athenia* that was sent to the bottom off the western coast of Ireland by a German U-boat. The civilized world was shocked at the heavy casualties that included hundreds of women and children who were being sent to safety in Canada. Following that sinking, British merchant shipping losses began to rise, and it was obvious that the Home Fleet would have to furnish immediate defense against this unexpected force of U-boats. Carriers were called in on the presumption that their aircraft could quickly spot and depth-charge the undersea raiders—a plan easier to conceive than to carry out. The *Ark Royal* and *Courageous* were ordered to stiffen the Royal Navy's defenses.

Screened by four destroyers, *Courageous* was on a search during the night of September 17 when two of the screen ships were sent off to track down a U-boat that was reported to be attacking a merchantman. As *Courageous* turned into the wind at dusk to bring in her aircraft that had been making an aerial search, she happened to move into the torpedo-area of submarine U-29, commanded by Lieutenant Commander Schuhart. Whether this unfortunate contact was a hundred-to-one shot as Sir Winston Churchill explained later, is conjectural. At any rate, the U-boat's torpedoes were most deadly; of a crew of 1260, more than five hundred were lost, including *Courageous*'s skipper, Captain Makeig-Jones. It was also learned that *Ark Royal* was attacked some three days later by U-39, but the three torpedoes fired had magnetic-pistol failures, and exploded prematurely, and the high columns of water reaching up above the decks of the carrier warned the destroyer screen. Smart responsive action resulted in the destruction of the raider and capture of her crew.

The carrier *Glorious* was sunk by enemy gunfire during the British withdrawal from Norway in June 1940. In this operation 24,000 men, with their equipment and stores, were successfully embarked on three troop convoys without hindrance by the enemy. The carriers *Ark Royal* and *Glorious*, together with a force of two heavy cruisers and sixteen destroyers, might have escaped enemy interference, but meanwhile the cruiser *Devonshire* was embarking the King of Norway and his staff from Tromsø, and other commitments came up, including a

false report that a number of enemy ships were heading for Iceland. As a result, the covering force that had been set up to bring in the troopships from Norway was for a time widely dispersed. It was at this point that the German battleships *Scharnhorst* and *Gneisenau*, the heavy cruiser *Hipper*, and four destroyers stumbled on some trawler escorts and a tanker belonging to the British force. These vessels were sunk and *Hipper* and the destroyers returned to Trondheim, but the battleships continued to search and at four o'clock on the afternoon of June 7 noted the smoke plume of *Glorious* and her escorting destroyers *Acasta* and *Ardent*. The carrier had been detached earlier that morning to proceed home independently, since she was presumed to be short of fuel. She was now some two hundred miles ahead of the main convoy.

On sighting the enemy, *Glorious* attempted to engage with her four-inch guns at 27,000 yards—why, no one has ever explained. When it became apparent that she could not compete with the German battleships with such weapons, she decided to launch her torpedo bombers. But as luck would have it, a shell struck her forward hangar, started a fire that destroyed all her Hurricane fighters, and prevented her armament force from hauling up torpedoes from below for the bombers to carry—if they could get off. During the next thirty minutes *Glorious* received heavy-caliber blows from which she never recovered. Escape was out of the question, and by 5:20 she was listing dangerously. The order was given to abandon ship, and the British carrier sank twenty minutes later.

In the meantime the two destroyers had behaved heroically. In an effort to cover *Glorious* both had laid down a heavy smoke screen and both had fired their torpedoes at the enemy, but the firepower of the German battleships soon overwhelmed them. *Ardent* was the first to go down, and later *Acasta*, fighting against great odds, actually put one torpedo into *Scharnhorst* before she too rolled over. *Scharnhorst* was damaged by the torpedo and withdrew from the action and limped back to Trondheim.

The British loss was 1474 officers and men of the Royal Navy and forty-one of the Royal Air Force. In this disaster the carrier was not handled as she should have been under the circumstances. She should have known of the approach of the German warships in time to have had a force of torpedo bombers in the air for the attack, long before the battleships were able to use their long-range weapons. At that time of day and year in those latitudes, there would have been many hours

of daylight, and why no aircraft were available or at "alert" to meet this situation is a mystery.

Months later, it was admitted that there had been no logical reason for *Glorious* to have left the main body. She had enough fuel to steam at the speed of the convoy, and all of them should have kept together.

These two carrier losses were replaced by *Illustrious* and *Formidable*, and another, *Victorious*, was commissioned in May 1941, but in November of that year *Ark Royal* was torpedoed and lost.

Possibly no aircraft carrier in any navy won such a record of achievement and affection as did Britain's H.M.S. *Ark Royal* through her activities in the first two years of World War II. It was the *Ark*'s redoubtable career that first focussed the attention of non-seafaring people on the potentialities of these floating airfields. Although carriers had been built and made the subject of many heated debates, and some had been exhibited in peacetime naval maneuvers, it was *Ark Royal* that first displayed what could be done in actual warfare by these new and novel vessels.

The wartime carrier was the third ship in British naval annals to carry that honorable name. The first was built at Deptford for Sir Walter Raleigh who christened her the *Ark*, but, as was the custom in Tudor times, she also bore the name of her owner and became *Ark Raleigh*. With the menace of the Spanish invasion, ships were needed to defend Albion and before she was actually launched, she was taken over by the Crown for £5000, and renamed *Ark Royal*. She was a large vessel, nearly fifteen hundred tons, or about the size of a modern destroyer, and was commissioned as the flagship of Lord Howard of Effingham, the Lord High Admiral of England. She played a leading part in the destruction of the Spanish Armada. In later years she was rebuilt and renamed *Anne Royal*, in honor of James I's queen, and served periodically as a flagship until she was wrecked and lost in 1636.

No other *Ark Royal* was built until 1914 when the Admiralty chose the name for the first large seaplane carrier, a converted merchant vessel that served well in the Gallipoli campaign. In 1935 when it was decided to build a third *Ark Royal*, the seaplane carrier was renamed *Pegasus*, a hardy vessel that was still in service for experimental work during the Second World War.

The keel of the third *Ark* was laid at Cammell Laird shipyards in Birkenhead, England. She was the second British ship to be planned

and built as a carrier, and she embodied all the improvements suggested by experience. She was launched April 13, 1927, after more than two million pounds had been spent on her construction. She had nine decks, her flight deck was eight hundred feet long, and she accommodated sixty aircraft, or five Fleet Air Arm squadrons, composed of Blackburn Skuas and Fairey Swordfish. The first were two-seater fighter dive bombers with a speed of two hundred miles per hour, but these were replaced later with Fairey Fulmars that had eight fixed guns and an aerial gunner aft. The Swordfish, which *Ark Royal* carried throughout her career, was a torpedo-spotter-reconnaissance biplane with a fixed undercarriage and open cockpits. In attack it mounted an eighteen-inch torpedo, or a fifteen-hundred-pound bomb load, and had a crew of three, pilot, observer, and air gunner.

The starboard island of *Ark Royal* carried the navigating bridge, the mast, and funnel. The captain's sea cabin was directly below the bridge, with the chart room, air intelligence office, and wireless control office nearby. The ship's armament consisted of sixteen four-point-five guns, four multiple pom-poms, and eight multiple machine guns. Her speed was 30.75 knots, and her fuel endurance exceeded that of any previous carrier.

But the aircraft carrier was still the Cinderella of the Navy; her true capabilities were not fully appreciated, for many men in the service still thought that naval aircraft should be restricted to scouting and reconnaissance. Because of her size and the number of her crew, *Ark Royal* did not immediately form any set character—perhaps no carrier does for many months.

The first aircraft to fly aboard were a squadron of Swordfish that took off from Southampton, once *Ark Royal* had completed her trials. She then moved out on her maiden voyage for the Mediterranean and steamed into Valetta, Malta, where she caused considerable interest; nothing that large had been seen there before, and the luxury of her quarters made a new mark in the usual Spartan accommodations found on British vessels of the time. She engaged in day and night flying training, exchanged torpedo and bombing attacks with H.M.S. *Glorious*, an earlier type carrier, and returned to home waters late that March.

During the uneasy summer of 1939 *Ark Royal* remained in the area around Great Britain, and, other than putting on a ceremonial fly-past for the King and Queen as they left for their historic North American visit, the officers and crew continued preparing for the war they knew

to be inevitable. On August 31, 1939, the famous carrier put to sea with the Home Fleet to patrol between the Shetlands and Norway. A day later one of the *Ark's* Swordfish that had been sent out on a reconnaissance in vile weather, had to make a forced landing on a Norwegian fiord and subsequently sank, but the crew paddled to shore in a rubber dinghy. Since war seemed imminent they faced the prospect of being interned in Norway. As luck would have it, though, they landed near a Norwegian aircraft base; the officers were sympathetic and helped them get to Bergen by seaplane from where they boarded a ship for England just a few hours before the declaration of war.

Shortly after eleven o'clock on the morning of September 3, Vice-Admiral L. V. Wells, who was flying his flag from *Ark Royal*, received a pink signal slip marked "Urgent Priority," on which were written two seemingly innocuous words, "Total—Germany," the same Admiralty cipher message sent to every ship of the Royal Navy that morning. A short time later a boatswain's mate went to the transmitter of the ship's address system and claimed everyone's attention with "D'ye hear there?"—the British variation of "Now hear this!"

Then Captain A. J. Power took over: "This is the captain speaking. I have just received the signal, 'Commence hostilities against Germany.'"

There was no particular outburst of enthusiasm or dismay from the ship's company—the news had been expected momentarily. They went about their duties and over the next few days the Fleet cruised east of the Orkneys, risking only the hazards of a heavy fog. At dawn each morning *Ark Royal* launched a reconnaissance formation hoping to find the enemy steaming out into the North Sea, but not until the *Fanad Head* incident, did this proud carrier have much to jot in its log.

There have been many variations of this episode. One British report states that when the merchantman's appeal for aid was sent out, *Ark Royal* was some two hundred miles to the northeast, but she turned at once for the scene of the attack and flew off three Skuas, moving into the wind to make the launching. Before she could resume her course, Leading Signaller J. E. Hall saw a torpedo running straight toward the ship, and his prompt and accurate report is said to have made it possible for the Officer of the Watch to put the helm over just in time.

The accompanying destroyers then took up the hunt as *Ark Royal*



steamed out of danger. The first pattern of depth charges jumped the U-boat's engines off their bearers, and the second blew her from below in a badly damaged condition. When the raider broke surface, it was identified as U-39. The British destroyers opened fire, and then ceased as the German seamen scrambled on deck. The whole submarine's company, including the captain—forty-three in all—abandoned ship and were taken aboard the destroyer *Faulknor*. The U-boat sank a few minutes after surfacing.

Meanwhile the three Skuas had sighted *Fanad Head* which had stopped. Her passengers and crew had taken to lifeboats. A U-boat, later identified as U-30, was on the surface nearby, shelling from what appeared to be a widening patch of oil. The Skuas went down and released their bombs over this patch just as the submarine crash-dived, leaving a couple of her gun crew floundering in the oily water. Two of the Skuas literally blasted themselves into the sea. In their enthusiasm and anxiety to get as close to the target as possible, they dived so low their own bombs blew off the tails of their aircraft. They flopped into the water and the crews took to their rafts.

Twenty minutes later the submarine reappeared and the remaining Skua tried to sink her by firing 1150 rounds from its fixed front gun in a single burst. The U-boat submerged and this Skua returned to *Ark Royal*. Some time later U-30 surfaced again, picked up the Skua crews from their rafts and headed for Germany. Then six Swordfish spotted the submarine as she was trying to put another torpedo into *Fanad Head*. Not knowing their Skua comrades were aboard, they promptly attacked and believed that they had sunk her, but U-30, after putting off one of her wounded men in Iceland, finally returned to Germany. She carried the first Royal Navy airmen to be made prisoners of war.

Three days later *Courageous* was torpedoed while carrying out her antisubmarine duties. The Admiralty then decided that carriers were too vulnerable to be used independently on such hazardous duty and *Ark Royal* was recalled to port with orders to operate with the Home Fleet.

On September 26, she experienced the famous "sinking" claimed by Dr. Joseph Goebbels, Germany's Propaganda Minister, which made an innocent Luftwaffe pilot the laughingstock of airmen all over the world.

*Ark Royal*, escorted by the battleships *Nelson* and *Rodney*, and all of them hemmed in by a close screen of destroyers, was bringing a

damaged submarine back to port. Two of the *Ark's* reconnaissance aircraft were on patrol above this flotilla and just before noon sighted three German Dornier Do.18 flying boats that were shadowing the British force. They flashed a warning and nine Blackburn Skuas, fueled and armed, were put on alert. After being given their instructions, the pilots and gunners climbed in, and the fighter force was launched, flashing into the sky like skimmed playing cards.

The section formed over the carrier and then flew off for the attack. Every man was keyed up, for here was the promise of their first naval air combat. The reconnaissance planes kept track of the Dorniers flying low over the water, their dark blue and green camouflage making them difficult to spot, but finally the Skua pilots found them outlined against a patch of light that glared through a hole in the clouds. The British naval fighters attacked, braving the heavier armament of the flying boats, and two were driven off, damaged, but not downed; their superior speed enabled them to escape. The third was shot down by Lieutenant B. E. McEwen and his air gunner, Acting Petty Officer Airman B. M. Seymour. This was the first enemy aircraft destroyed by any air service in the war. The destroyer *Somali* picked up the crew of four and sank the wreckage of the flying boat.

The attacking Skuas returned safely, the Commander-in-Chief, Home Fleet, signaled his congratulation and there was mild jubilation, but the major event of the day was still to come.

The two Dorniers that had escaped reported the position of the British force to German Naval Headquarters and at two-twenty that afternoon, shortly after the last Skua had been recovered, a Heinkel 111 bomber, piloted by Leutnant Adolf Francke, approached under cover of a cloud at the six-thousand-foot level. Before any defensive action could be taken, a one-thousand-pound bomb was released about fifteen hundred feet above *Ark Royal's* deck, but everyone topside seemed fascinated by the size and coloration of the missile, rather than aware of its potency. One wide-eyed midshipman swore it looked like Jerry had dropped an Austin sports car, another argued that it looked more like a London bus. At any rate, it was spotted just in time to alter course and the bomb fell into the sea, throwing up a great geyser of water thirty yards from the port bow.

It was this tremendous upsurge of water that possibly caused the claim made later. It cascaded high above the flight deck and torrented across the fore end. The *Ark* lifted her bow, shook her whiskers, rolled

slightly to starboard, righted herself, and turned back on her course. The only damage was broken crockery.

After his bomb attack Leutnant Francke turned back and sprayed the flight deck with machine-gun bullets, but by then the British had broached their antiaircraft guns and the German was sent off with a generous fusillade of Vickers and Kynochs in his wake.

When he returned to his base, Leutnant Francke stated he had found and dive-bombed an aircraft carrier in the North Sea. He said he believed he had scored a direct hit, but was not certain, and made no claim to have sunk the vessel. The German Ministry of Propaganda made it for him. The Berlin newspapers and news magazines proclaimed the sinking of *Ark Royal* in enormous headlines, extra editions rolled off the presses with red ink making up for what the size of type failed to indicate. Imaginative artists drew graphic pictures of the *Ark*'s final moments, and Field Marshal Goering sent the bewildered Francke a message of congratulation, decorated him with the Iron Cross and promoted him to the rank of oberleutnant. Dr. Goebbels' Propaganda Ministry went all out, quickly publishing a children's illustrated booklet entitled *How I Sank the Ark Royal*. It was supposedly written by the unfortunate Heinkel pilot.

Was ever a man in such a distressing position? Promotion, probably deserved, and a decoration for a deed he had not claimed. Francke's brother officers took two views of the situation. Some sympathized with him, and hoped they never got into the same pickle, others charged him with deceit and said he was wearing a ribbon he had not earned. In some quarters the unfortunate pilot was the butt of cruel jokes and within a short time he was considering suicide. He talked the matter over with William Bayles, an American newspaperman then covering Berlin. Bayles pointedly suggested that if Francke denounced the Ministry of Propaganda and stated that he had not claimed to have sunk the *Ark Royal*, suicide would be unnecessary.

But the matter refused to die down. The German broadcasting stations continued to ask: "Where is the *Ark Royal*?" At first the British ignored the claim that the carrier had been sunk. Later a formal denial was made and the United States Naval attaché attended divine service aboard the *Ark* and wrote an official report of his visit. But no one in Germany, except perhaps Leutnant Francke, believed that the British carrier was still afloat. The officers of *Ark Royal* sent Francke an invitation to become an honorary member of their mess, and addressed the note "c/o A. Hitler, Esq., Berchtesgaden." Months later when

the famous carrier appeared in Rio de Janeiro, the German colony there refused to believe their eyes and swore she must be another ship of the same name.

In the words of Zechariah, she continued to pass through the sea of affliction. Her fighters shot down or damaged more than one hundred enemy aircraft, her bombers delivered havoc to the airfields of Sardinia, she inflicted great harm on the Italian Fleet, and set the stage for the destruction of the *Bismarck*.

On October 2, 1939, *Ark Royal* joined the battleship *Renown* and a screen of destroyers, to be known as Force K. They steamed south from home waters and headed for Freetown, Sierra Leone, off the west coast of Africa. The mission was trade protection and ocean search in the South Atlantic where a surface raider, at first believed to be the pocket battleship *Admiral Scheer* was on a rampage.

Force K reached Freetown on October 12 where it refueled, dismissed the destroyer screen and swept on toward St. Helena off the west coast of British South Africa. From that time on *Ark Royal's* Swordfish were in the air almost constantly, but it was not until early in November that they had any success when one of the Swordfish crews spotted the German steamer *Uhenfels*, which, when intercepted, was found to be carrying about a million dollars in opium, besides a general cargo of nuts, hides, copra, and oils. Force K took her into Freetown and confiscated her cargo. It was next reported that S.S. *Africa Shell* had been sunk in the Indian Ocean by a German raider, and Force K tried to cut her off, but foul weather from November 27 to December 2 prevented any reconnaissance flying, so the force went into Capetown early in December.

This promised period of rest was interrupted within twenty-four hours when it was learned that S.S. *Doric Star* had been intercepted and attacked south of St. Helena, indicating the mysterious raider was still somewhere in the Atlantic and understood to be steering west. *Ark Royal* and the rest of Force K left port and headed for a position in the central South Atlantic, from where they could use Freetown, the Falklands, or Rio de Janeiro for refueling, should it be necessary.

By December 13 the raider was finally identified as *Admiral Graf Spee* when she was engaged by the British light cruisers *Ajax*, *Exeter*, and *Achilles* off the Rio de la Plata. *Ark Royal* and *Renown* reached their refueling point on December 17 and by six o'clock that evening the carrier raced away, hoping to be in on the action against the *Graf*

*Spee*. The Swordfish crews were most anxious to show what they could do with their torpedoes, but before any of the men or ships of Force K could get into action, the German skipper of the *Graf Spee* had scuttled his vessel outside Montevideo harbor. An unsuccessful attempt was made to locate her supply ship, the infamous *Altmark*, so Force K had to set a new course and head for Freetown.

They pulled into that port on December 27 and enjoyed a delayed, but rather happy Christmas. The usual games were played and a captain of the Royal Marines played the role of Santa Claus, well whiskered and padded, and, to the joy of the beholders, topped by a small derby hat. Presents were distributed and plum puddings served to all hands. *Ark Royal* had steamed 75,000 miles and her aircraft had flown nearly 5,000,000. Between November 18 and December 27 she had spent only thirty-six hours in harbor, but had had steam on her main engines all the time. The famed carrier had truly shaken down, and her company had become a great team.

By February 15, the carrier was back in Britain to refit, and the ship's company enjoyed its first leave since the outbreak of war six months before. On March 22 she sailed for the Mediterranean with three new squadrons of Swordfish to engage in night flying over the desert. She was accompanied by H.M.S. *Glorious* and for a week the aircraft crews were engaged in intensive training ashore, but on April 9 the Germans invaded Norway and both carriers were ordered to Gibraltar, and then sent on to Scapa Flow. By April 23 they left for duty off the Norwegian coast. At that time Captain C. S. Holland took command of *Ark Royal* and assumed the duty of providing air cover for the naval ships and convoys heading for the action, and to attack the German-occupied airfields in Norway.

This was dangerous work for it is not a carrier's duty to operate in an area covered by the enemy's shore-based aircraft. The Swordfish and Skuas were limited in performance, speed, and range, and since the R.A.F. had no air bases in Norway, the distances were too great to send any but long-range fighters from the United Kingdom. The few of these available could not spend more than an hour in the combat area after they had flown there.

From the beginning of this ill-fated campaign both *Ark Royal* and *Glorious* worked under many hazardous conditions. They had to operate within range of hostile aircraft from the coast, and between them had only four squadrons of fighters to send up against the latest enemy types that were faster, more powerful, and better armed. These

intensive operations were possible for only four or five days at a time, after that, having done their best to harass the enemy, the carriers would have to sneak back to sea, well out of range of the Luftwaffe land-based aircraft.

Between April 24-28 *Ark Royal* furnished valuable fighter protection over the Namsos and Andalsnes sectors where British troops had gone ashore to attack Trondheim. The Skuas flew to the limit of their endurance and fought many one-sided combats, often against odds of six or seven to one. Although outnumbered and outdistanced, they shot down twenty German aircraft and damaged many more. On April 27 five Skuas came upon two Junkers 88s that were dive-bombing a British convoy, and in a few minutes both Junkers had to break off as their engines were on fire. The Skuas then went after a number of Heinkel 111s and sent down a brace of these in flames. As a breather, they took on and drove off two Dornier Do.17s, and then engaged fifteen more Heinkels that were in a ragged formation. One was badly damaged, but the enemy formation tightened up and sought more favorable areas. Now out of ammunition, the Skuas started a series of dummy attacks, hoping to relieve the convoy below. Under this aggression the attackers jettisoned their bombs and broke off.

Only two Skuas were shot down during these actions, but eight were lost because they had stretched their fuel too far, and, as they put it, were not able to rejoin their ship.

While the Skuas were running up their scores, the old "Stringbag" Swordfish were attacking German shipping and float planes in Trondheim harbor. They also bombed the nearby Vaernes airfield, destroyed all the hangars, and leveled many buildings. This raid was carried out from six thousand feet and the opposition flak was so heavy the pilots swore they "could smell it."

Day after day, with little respite, Skua and Swordfish pilots, "permanently escorted by Heinkels and Junkers," roared up and down the picturesque fiords looking for targets. When matters were too uncomfortable the British planes evaded their adversaries by flying dangerously close to mountain sides, or at zero level above the water, until they found another way out to sea. Many of the *Ark's* air crews were forced down on frozen lakes, in snowdrifts, or in the sea. The fortunate ones were rescued by nearby ships, others fashioned skis or snowshoes and trudged over many miles of unknown mountain trails until they could be guided through the enemy lines by friendly Norwegians.

Although a carrier's aircraft may have certain mobility, they have

no secure base. On many occasions upon returning to the ship, their crews, tired, cold, and hungry, were followed by enemy planes and bombed. During this campaign *Ark Royal* was an easy target for the Luftwaffe, and on one occasion was under attack for about twelve hours—ten near misses were scored, but no actual hits. On May 1, after another heavy bombing attack in which the Skuas destroyed one enemy bomber, the *Ark* returned to Scapa Flow. By then the British forces had withdrawn from the areas north and south of Trondheim, and the Germans had established contact with the garrison holding the port. On May 4 the *Ark* returned to the battle to give air protection to the British troops attacking the iron-ore port of Narvik, until the R.A.F. fighters could be brought in to the one available shore base.

*Ark Royal* had to cruise up and down about one hundred miles from the enemy coast. There was no darkness, and flying began at midnight and continued until 11 P.M. the next day. Inclement weather hampered the fighters, and at times the sea swell was so great, deck operations were impossible. There were numerous requests for air support, but the distances were such that it was not possible to maintain patrols over all areas at once, unless the carrier operated close inshore and in that way gave the German bombers a tempting target.

The Skua fighters were engaged all the time, but now they discovered a new and more aggressive type of pilot opposition. The new Mark V Heinkels had better evasive performance and could avoid battle unless surprised. Constant cloud cover favored this evasion and there were fewer successful engagements in this area than there had been over Trondheim. In one successful foray, five Heinkels encountered a Skua patrol over the British Fleet anchorage that resulted in a wild melee; one Heinkel was set on fire, and the patrol leader, Lieutenant W. P. Lucy with his observer Lieutenant M. C. E. Hanson, dived on two more Heinkels that had gone to wave-top level. Lieutenant Lucy went in close to attack, fired a burst that caused a Heinkel's port engine to smoke dangerously, but at that moment the attacking Skua exploded at fifty feet above the water and crashed. Lucy's body was found but his observer never came to the surface. However, this attack made the other enemy planes jettison their bombs and turn back for their base.

The last section of this patrol came on four Junkers 88s, and two Skuas followed one of them as it went down in a straight dive; the engines of the Junkers were shot to pieces and the aircraft crashed

into the sea but near enough to the coast so the five German crew members could swim to shore.

On May 9 six Swordfish attacked a railroad east of Narvik when the wind was so strong it took more than two hours to reach the target. On their arrival they were taken over by a Skua patrol, so they broke up into two subflights and made independent strikes on their targets. One bombed the Nordalshøen viaduct near the Swedish border and scored two direct hits, one on the center of the tracks and the other in the entrance to a tunnel. The second flight actually overturned a train in the Hundallen station and inflicted heavy damage on the sidings. Two Swordfish were hit by antiaircraft fire but were able to scramble back to the carrier. One of the supporting Skuas had to force-land near Rombaks Fiord, a small inlet near Narvik, but the crew hiked across country, made their way through the German lines, and reached the coast where they were taken aboard a British destroyer.

During this phase of operations *Ark Royal's* Skuas destroyed or damaged six enemy aircraft and possibly nine more, with a loss of nine Skuas, including one crash on deck, and five Swordfish. On May 24 *Ark Royal* sent off a striking force of fifteen Skuas, each armed with a 500-pound bomb, to attack the battle cruiser *Scharnhorst* in Trondheim harbor.

This attack meant a flight of 160 miles to get to the harbor which was tucked away about fifty miles from the coast. The Skuas had to fly through sub-Arctic daylight and a sky that offered no cloud cover, which meant the enemy had a flock of fighters on hand and had alerted every antiaircraft battery.

On approaching Trondheim at 11,000 feet the Skua pilots sighted *Scharnhorst*, with two cruisers and four destroyers, lying at anchor off the town. They were met with intense antiaircraft fire from the ships and shore batteries and were forced into violent evasive action that hindered their plans for a concerted attack. Messerschmitt 109s and 110s joined in the defense. Two attack formations, led by Lieutenant Commander J. Casson and Captain R. T. Partridge, were made on the battle cruiser, one direct hit was scored and several near misses registered. Unfortunately, it was learned later that the bomb which struck *Scharnhorst* abaft the funnel had not exploded and the general damage was negligible. Eight Skuas failed to return and all crews were reported missing; it was the heaviest loss the famous carrier had suffered, or was to suffer in a single operation. That same day the



Norway evacuation was completed, and *Ark Royal* returned to Scapa Flow.

In midsummer of 1940 *Ark Royal* and her company were saddled with a melancholy duty. France had capitulated and Italy had joined the Hitler forces. Under these circumstances, the disposition of the French Fleet gave the British government considerable anxiety. *Strasbourg* and *Dunkerque*, two new battle cruisers, along with two battleships, several light cruisers, destroyers, and submarines lay in Moroccan ports. Admiral Marcel-Bruno Gensoul, the French Commander-in-Chief, was first approached in a most diplomatic manner with requests that steps be taken to prevent these valuable vessels from falling into the hands of the Germans or Italians. Several plans were suggested but Admiral Jean Darlan refused to accept any of them and stated repeatedly that "under no conditions would his fleet be turned over to Britain's enemies."

The tone of his statements was most unsatisfactory, and the British had no choice but to "make certain" that this fleet would in no way hamper their chances to defeat Hitler or Mussolini. Captain C. S. Holland of *Ark Royal* was a member of the British naval mission that was selected to warn Admiral Darlan what the consequences would be. This was an uncomfortable duty, for, up to the start of the war, Captain Holland had been the Naval Attaché at the British Embassy in Paris, and subsequently Liaison Officer to Admiral Darlan.

Neither Admiral Darlan nor his second-in-command, Admiral Gensoul, would receive the British emissary, and Captain Holland was compelled to transmit the British proposals that the French Fleet should agree either to continue operations with the British Navy, or sail under British control to a British port, the crews to be repatriated on arrival, and the ships restored at the end of the war. A further alternative was that Admiral Darlan should have the vessels demilitarized at a port in the French West Indies. If these offers were declined, Captain Holland explained, the British Government would, with profound regret, require Admiral Darlan to sink his ships within six hours, otherwise the Flag Officer, Force H, had orders to use "whatever force might be necessary" to prevent the French ships from falling into the hands of the Germans or Italians.

After much consideration all offers were refused. Captain Holland returned to the flagship of Vice-Admiral Sir James Somerville, and at 5:53 on the afternoon of July 3, Force H opened fire on the French

vessels. *Ark Royal's* Swordfish did the spotting for a bombardment that lasted ten minutes. Five other Swordfish, with an escort of Skuas, dropped mines in the entrance to Mers-el-Kebir harbor in Algeria. The battleship *Bretagne* and two destroyers were sunk immediately, *Dunkerque* was severely damaged, and ran ashore, the battleship *Provence* was beached.

Shortly before the main bombardment began, *Strasbourg*, with a screen of six destroyers, broke out of the harbor at dusk, eluded Force H and headed at full speed to the eastward. Six Swordfish from *Ark Royal* went in pursuit, their bombs straddled *Strasbourg* but no direct hits were scored. In an attempt to return to the carrier's deck, two of the aircraft crash-landed in the sea out of fuel, but a British destroyer rescued their crews.

A second formation of Swordfish, armed with torpedoes, was flown off at eight o'clock. They caught up with *Strasbourg*, which was steaming at twenty-eight knots, three miles off the African coast. She put up a formidable pattern of antiaircraft fire, but the torpedo planes swung out wide and went down to whitecap level. Gradually they set themselves for a low-level attack from the shelter of the shore where the sunset would put an afterglow behind the silhouette of the French battleship. Twenty minutes after sunset they went in for their attack.

This was the first time a carrier's aircraft had attacked a capital ship at sea with torpedoes, and the pilots, either unaware that they could penetrate the destroyer screen, or because of the fire put up by the small defense vessels, released their torpedoes from outside the screen. One hit was scored but did not prevent *Strasbourg* from escaping and eventually getting into Toulon, as did seven cruisers that had been berthed at Algiers.

The next day a reconnaissance over Oran harbor indicated that although *Dunkerque* was grounded she was not permanently out of action, so, as an alternative to bombardment, two squadrons of Swordfish were sent in to finish her with torpedoes. These planes took off in the dark about 5:15 A.M. and arrived off the harbor at sunrise. As the first rays of the morning sun gilded the French battleship, the attacking Swordfish went into a shallow dive from seven thousand feet, hopped over the breakwater in line-astern, and raced down the heaven-sent flare path. Four of the six torpedoes bored into *Dunkerque*.

As these aircraft re-formed over the harbor, the second squadron went in in three waves. The first pair enjoyed complete surprise and

was unopposed, but the second and third took a heavy battering from antiaircraft fire, but by rare good fortune all torpedo planes returned safely. The battle cruiser was completely immobilized for a considerable period.

This action ended the operations against the French Fleet, and *Ark Royal* along with the rest of Force H returned to Gibraltar. As regretful as all Britishers felt at the time, this elimination of the French Navy was an important factor in the outcome of the war. Almost at a single stroke of violent action, Great Britain had produced a profound impression in every country. Although she had been counted down and out, and on the brink of surrender to an amazing array of enemy power, she had struck ruthlessly and secured an undisputed command of the sea. It was plain to the whole world that the British would stop at nothing to overcome Hitler and the Reich.

Three days after the operations off Oran, the pilots and air gunners of *Ark Royal* fought their first of many engagements with the Italian Regia Aeronautica. The object of these combats, according to Flag Officer, Force H, was "to test the quality of the ice cream."

While covering convoy movements in the western Mediterranean a section of Skuas, led by Lieutenant Richard M. Smeeton (now Rear Admiral Smeeton), sighted what turned out to be a Cant-506 float plane. After a concerted attack, following a thirty-minute chase, the Italian aircraft was forced down to the sea. Later that afternoon forty Savoia SM.79 bombers attacked Force H in three waves, dropping one hundred bombs. Skuas from *Ark Royal* shot down one and damaged two others, the remainder jettisoned their bombs and turned tail. They claimed to have put one direct hit on *Ark Royal*, and to have set H.M.S. *Hood* on fire, but there was no truth in these statements. When the Italians put up a formation of planes to shadow Force H, the Skuas destroyed three of them in quick time.

The *Ark's* Swordfish made their first attack against Italian soil on August 2 when their target was Cagliari on the southern coast of Sardinia. Armed as bombers, the planes flew off at 2:30 A.M. and during the take-off one of the aircraft hit the island structure with its starboard wing and went overboard. The others got off successfully and found themselves aloft in a fine night, but buffeted by a strong headwind that cut their speed to sixty knots. In the darkness they failed to make a good contact with the enemy coastline, having mistaken Cape Spartivento at the western end of the bay for Cape Carbonara,

and after this foul-up they flew back along the coast in the early dawn. It was evident from this experience that any projected attack in this area would have to be made in broad daylight.

In the meantime a force of planes fitted out as minelayers and led by Lieutenant R. N. Everett had also lost its way, but as the bombing force approached Cagliari they spotted their minelayers being opposed by Italian coastal batteries, one of which was popping six-inch shells in front of the minelayers to create great splashes that would swamp the diving planes. Everett's force ignored this, laid the mines from a height of fifty feet and turned away. The dive bombers, led by Lieutenant Commander G. B. Hodgkinson, attacked the hangars and buildings of Elmas airfield, and the rear planes of this formation bombed a number of Italian seaplanes lying at moorings in the harbor. This main assault was completed in less than sixty seconds.

The noisy British intrusion finally aroused a number of Italian fighters and a small formation was sent aloft, but only one pilot fired his guns—at one of the tail-end Stringbags which received no damage. This opposition caused the Italian anti-aircraft gunners to withhold their fire while their own planes were in the area, and the British pilots welcomed this surcease since the barrage had been fairly heavy.

The raid was particularly successful; four large hangars were wrecked, several important buildings set on fire, and two large aircraft and two float planes destroyed. Only one Swordfish was lost when its engine was practically shot away and the pilot put his plane down on the enemy runway during the height of the engagement. The crew, of course, was taken prisoner, but the remainder of this air-striking force returned to *Ark Royal* independently. The Swordfish had 150 miles to cover and the last plane did not land until after 7 A.M. which meant they had been in the air for over four and a half hours; three of the old Stringbags touched down with less than five gallons of fuel in their tanks.

By now *Ark Royal* was the darling of the British Fleet, her renown had spread all over the world, dozens of pamphlets recording her fantastic career were on sale everywhere. She was the subject of a very popular picture postcard sent throughout the British Empire, and in America she was as warmly adopted as though U.S.S. instead of H.M.S. was before her name. She was an especial pet in Gibraltar, then considered her home base, and every time she came back to the shelter of The Rock, the famed Black Watch Regiment, then in the

garrison, sent out their regimental bagpipers in small boats to pipe her in.

It should be remembered that she was the first true aircraft carrier to go into action against an enemy, and the record and new tradition she was creating won the affection of every airman, seaman, or soldier. By late summer of 1940 she had become a heartwarming legend throughout the free world.

Early in September *Ark Royal's* Swordfish, led by Lieutenant Commander Mervyn Johnstone, made two more attacks on Cagliari. In the first, listed as Operation Smash, the striking force first pinpointed the target with parachute flares, and the Italian antiaircraft gunners added columns of "flaming-onion" missiles which soon made the area as giddy as a summer amusement park. The Stringbags swished and chugged through this garish illumination and scored direct hits on the barracks, and the aircraft that had been carefully dispersed for safety; one wing of the military headquarters was completely destroyed, and the repairs that had been made to the damage inflicted previously were soon eradicated. Most of the field was a shambles by the time the Britishers had left.

Operation Grab, arranged for the next day, encountered unfavorable weather. The night was dark and hazy and as the strike force approached Cagliari, the surrounding valleys were blanked out with mist and low clouds. Over the next forty-five minutes the observers dropped a number of flares to identify their targets, but had no success. Four of the aircraft, needled by Italian searchlights, went down and peppered them with machine-gun fire until one was doused. Two planes dropped their bombs on what they believed was a flare path, but never learned what they had hit. The rest of the force had to jettison their bombs at sea. On their return to the carrier deck, the most important news was that the *Ark's* cat had had kittens, and the first two were promptly named "Smash and Grab, the Cagliari Twins."

On November 9 another raid was made on Cagliari. This one was an important factor in covering the passage of a large naval force south of Sardinia. Again hangars and a factory were hit, despite the fact that antiaircraft defenses had been strengthened and now consisted of more than one hundred guns.

Previous to this foray *Ark Royal* had taken on a squadron of new Fairey Fulmar fighters. The Fulmar was an eight-gun, two-seater fighter, powered with a 1135 hp. Rolls-Royce Merlin engine. It was a good, tough piece of equipment, and the fighters began this raid

by shooting down three planes the Italians had sent up to shadow Force H.

On the morning of November 27 the British naval force was escorting an eastbound convoy that carried tanks and military stores. Southwest of Sardinia the force picked up H.M.S. *Ramillies* which was to take the convoy on to Alexandria, but before the escorts had parted company, a Swordfish on reconnaissance sighted an Italian fleet south of Sardinia that was composed of two battleships, six cruisers, and sixteen destroyers.

Sensing long-awaited action, another Swordfish was sent out to relieve the first shadower, and the pilot of the second Stringbag, protected by a friendly cloud, flew at two thousand feet a distance of between two and three miles from the enemy from where he could report every movement. Force H then turned into line with battle ensigns flying and all guard rails down, but the enemy warships were well beyond the range of *Renown's* big guns and it was necessary to slow them down. *Ark Royal* took care of that by flying off eleven Swordfish armed with torpedoes. This winged force was led by Lieutenant Commander Johnstone and by the time it was in the air the Mediterranean area offered a brittle, cloudless sky, bright sunshine and a sea as smooth as costume silk—there wasn't an inch of cover from Gibraltar to Alexandria.

After flying for some twenty minutes they sighted the enemy cruisers proudly steaming in two columns. Twenty-five miles to eastward, the two battleships, screened by seven destroyers, could be plainly seen. By 11:30 the cruisers were being engaged by the advance battle units of Force H, and at 12:40 the Swordfish dived out of the sun to attack the battleships. As Johnstone's force went down, the enemy cruisers to the westward opened fire in short bursts, chiefly to warn the battleships of their danger.

Commander Johnstone selected the leading battleship, *Vittorio Veneto*, a new and powerful vessel of the *Littorio* class, but his pilots had to press through a heavy antiaircraft barrage. They released their torpedoes well inside the destroyer screen, from a range of seven hundred yards. Commander Johnstone found himself too close to *Vittorio Veneto*, so he turned to port and fired at another, one of the *Cavour* class. From that point on a heroic air-naval battle ensued; a great column of brown smoke and water towered up above *Vittorio Veneto* and she was seen to have been hit abaft her after funnel, there was another explosion astern, and a third ahead of the second ship.

As the air-striking force turned away, the air gunners sprayed the bridges of the battleships and destroyers.

In the meantime the Italian cruisers retired toward the Sardinian coast instead of moving in to aid the harassed battleships. *Renown* put on every ounce of steam to bring the battleships to action, but the attack by the Swordfish had not impaired their speed materially, and the British battleship was not able to get within effective range. By one o'clock further chase was out of the question and Force H was compelled to return to its convoy duty.

The Swordfish, however, did not give up. Early that afternoon Lieutenant Commander J. A. Stewart-Moore led nine aircraft in pursuit. They soon caught up with three of the cruisers and then sighted the battleships south of Cape Carbonara. The Sardinian airfield at Monserrato was only forty miles away and the Italians already had fighters in the air, so an immediate attack was called for—under these conditions the cruisers offered a more promising target.

Commander Stewart-Moore took the Stringbags down in line-astern, but just when they were committed to their torpedo release, the cruisers turned smartly to starboard. There was one great explosion under the rear cruiser and a column of water gushed up as high as her bridge, and she started producing heavy smoke from her foremost funnel. Two of the Swordfish attacked the leading cruiser and reduced her speed.

From this point on the Italians put up a heavy barrage, but it had come too late; the Swordfish air gunners wiped them down, and the enemy antiaircraft gunners forsook their weapons, or fired wildly in every direction. For a time their shells were more dangerous to their own cruisers than to the airborne raiders. Two Swordfish were hit, but all of them flew back to *Ark Royal* in beautiful formation.

Later that day seven Skuas, led by Lieutenant Richard M. Smeeton, were dispatched to bomb the damaged cruiser. They failed to find her, but did sight three others of the *Condiottiere* class that were steering north in line-ahead. This time a thin layer of cloud helped the Skuas to make a surprise attack; the cruisers took no avoiding action and did not open fire until the assault was over. But with all this in their favor, the Skuas claimed only near misses. They did shoot down an R.O.43 float plane and received no casualties themselves.

Back at the Force H formation, squadrons of Savoia '79s, torpedo bombers, repeatedly attacked the various vessels of the force. The massive *Ark Royal* was always a tempting target, and since her usual

station was at least three miles away from the main force to give her elbow room to swing into the wind, she attracted plenty of hostile attention. The enemy bombers came over in wave after wave for more than an hour. The flight deck was almost continually awash from the cascades of near misses, and at one time the big carrier disappeared completely from the sight of Force H when a solid wall of water went up from more than thirty bombs that were dropped around her, some no more than twenty yards from her hull sides. Admiral Somerville who was watching from the bridge of *Renown* believed that *Ark Royal* had gone down, but then, to his amazement, the fore end of her flight deck came plowing out and she emerged undamaged, with every gun blazing.

In the summation of this second time that enemy warships had been attacked by carrier-based aircraft with no great naval victory, it was learned that much of the fault was caused by the failure of many torpedoes, or that their warheads were not sufficient to inflict serious damage to the safety bulges of the capital ships. The targets had been stalked and hit. The fighters had flown off and provided good cover for the rest of the force. The convoy had gone through safely. *Ark Royal* still continued her great conquest.

That evening, November 27, Force H was ordered to return to Gibraltar from where routine covering movements were carried out. Air reconnaissance and search patrols were the order of the day. Anti-submarine and fighter sweeps were routine operations, and the new Fulmars harassed any shadowing craft that the enemy dared put into the sky. But more important, intense training was continued for every man Jack of the service; even Admiral Somerville flew regular patrols in order to stiffen the anticipated torpedo attacks.

After weeks of routine operations, *Ark Royal's* Swordfish were given a new type of target, the dam at Lake Tirso in Sardinia. On this day, February 2, 1941, a strong, gusty gale was blowing and the flight deck was flipping up and down like a berserk lift, but in spite of launching difficulties, a force of eight planes took off at 6 A.M. without mishap. On reaching the coast of Sardinia the weather worsened, hailstones were mixed with a driving rain and ice formed on the wings as the planes flew through a cloud level at five thousand feet. There was nothing to do but turn back, out to sea, and wait for daylight, and hope for a change in the weather.

While flying around under these conditions, one Swordfish lost its way and had to return to the carrier, the rest went back to the target



individually and found the ground defense very alert. Six of the seven planes met heavy antiaircraft fire as they reached the dam, and two were forced to jettison their torpedoes when ice on their wings made flying difficult. Another was shot down and the crew taken prisoner; only four made a torpedo-run on the target.

The most successful drop was made by Sub-Lieutenant R. S. Charlier who had flown in at about fifty feet all the way from the coast and therefore received no ack-ack fire until he was actually making his run. He went out at the same level. But the last pilot to fly over the target leaped the obstruction with sixty feet to spare, and could observe no serious damage on the face of the dam. And so it went. Here and there a degree of success, but all too often few rewards for such gallant efforts.

A week later *Ark Royal's* Swordfish took part in a more rewarding operation when Force H was engaged in the bombardment of Genoa. At five o'clock on the morning of February 9 the carrier was detached from the main force, and, screened by three destroyers, she sent off an air-striking force of fourteen planes to attack the Azienda oil refinery, one of the larger plants in Italy. Four more Swordfish followed with mines intended for blocking the harbor of La Spezia.

Diving from nine thousand feet, eleven of the bomber force worked over the factory, opened up the main buildings with 250-pound bombs, and followed this with a drenching of incendiary missiles. A large explosion resulted but it was difficult to form any true estimate of the actual damage. The Italians were taken by complete surprise and no antiaircraft gun was fired until the raid had been on for about six minutes. They did have a balloon barrage up, and one of the Swordfish entangled in a cable and crashed, killing the crew. They were buried later with full military honors.

Two aircraft of this force bombed the airfield and railroad junction at Pisa, and there were some jocular reports that one bomb had straightened the famous Leaning Tower, but the purists among the pilots denied this, and threatened to go back and photograph the tourist landmark, and put an end to the discussion.

Meanwhile the mine-laying sub-flight approached the shore at Leghorn where Byron and Trelawny had once made a funeral pyre for Shelley—and there dropped their mines.

As they returned to the carrier the activity at Genoa was in full blast, and it must have been a relief to see the *Ark* safe below them in the light of the dawn. The Italians had made no preparations to

guard against an invasion of the gulf, and Force H descended upon Genoa as unsuspectedly as the Swordfish upon the Azienda refinery. During this bombardment three Swordfish, with an escort of Fulmars, acted as stand-by spotters for Force H. The gunnery was carried out by indirect fire, and Lieutenant V. N. Graves earned high praise for the precision with which he performed this duty. The reports he sent back contributed materially to the success of the operation, although observation was made difficult by two changes of targets to widely separated areas, and by clouds of smoke from the explosions and the burning oil tanks.

Convoy work in the eastern Atlantic, as well as in the Mediterranean, occupied the crew and aircraft of *Ark Royal* throughout the early part of 1941. During one assignment a Fulmar pilot sighted the battleships *Scharnhorst* and *Gneisenau*, but at extreme visibility. At that precise moment the aircraft's radio failed to function and by the time the Fulmar pilot had returned to the carrier it was too late to send out a striking force. The next day bad weather made flying impossible.

Deprived of this rare opportunity, the *Ark's* Swordfish continued to search and eventually intercepted three of the raiders' supply ships. One of these was actually a captured British tanker, *San Casimiro*, which had a detachment from *Gneisenau* in command. Then followed a plot no Hollywood hack writer would dare inject in any war scenario. In order to attract the attention of "friendly" aircraft, the ship's baker, a Britisher, had contrived to write "S.O.S." in flour on the afterpart of the deck. Another of the crew waved a swastika flag out of a porthole as a Swordfish approached. Rather than have her recaptured, the Germans scuttled the tanker; the British crew was rescued and the Germans were taken prisoner by the men of the *Renown*.

Convoy escort, particularly in the Mediterranean, was a very sticky business, for the covering force had to be strong enough to defend the convoy against opposition by the Italian Fleet and the certainty of heavy air attack, especially so when the convoy was to the south of Sardinia and near the Sicilian coast. Steaming out of the Gibraltar passage usually lasted several days and by the second day Italian reconnaissance planes generally made their appearance. The Fulmars were expected to shoot them down in short order to prevent these spotters from getting back. The third day always was the most critical, for some shadowers had returned, or had gotten their information

through, and high-level bombing, synchronized with torpedo attacks, would begin a few hours later and often last throughout the day.

*Ark Royal* would remain close to the main force during such activity, but there were times when she had to work independently in order to operate her aircraft. When the day was calm and high speed was necessary to launch her planes, she often had to take great risks to carry out any important flying. During the critical hours she had to keep as many fighters over the convoy as possible, and direct them to the incoming enemy formations. On one passage sixteen Fulmars were kept in the air for more than four hours after the first enemy bombers had been sighted. Some of the pilots had to make four sorties in one day, and it was a problem to get aircraft off, have the deck ready for returnees, refuel, or rearm other aircraft, get pilots and observers fed and rested so the complex operation could be continued hour after hour. When the big guns were used in antiaircraft defense it was impossible—in those days—to launch or recover aircraft. In many instances flying into the wind had to be dispensed with in order to engage the enemy aircraft on the most favorable bearing. There were times when it was possible to make a quick turn into the wind to take on a plane during an emergency, but more often the returnee had to put down on the sea and hope to be picked up by a screening destroyer.

Italian high-speed torpedo planes worked resolutely to halt *Ark Royal* and the surface vessels of Force H. They tried coming in in large formations, roaring along only a few feet off the surface of the sea, but they were batted down like moths by the accurate gunfire of the British turrets; what the big guns did not get, the Fulmars did. On one occasion eighteen of thirty-six Italian torpedo planes that were making a mass attack, were shot down by the fighters or the anti-aircraft guns of Force H.

Captain L. E. H. Maund who took over *Ark Royal* from Captain Holland on April 19, said: "Our aircraft certainly took the spirit of our carrier with them into the sky. In one combat, two of them tackled a full squadron of enemy bombers. They literally hurled themselves upon the enemy, almost colliding with them until they were both shot down, but not before they had destroyed two bombers, damaged a third that was later finished off by their comrades, broke up the formation and caused the survivors to jettison their bombs, thus giving security to the convoy."

Each convoy escort furnished its own pattern of excitement, but

one day's engagements are typical of many. On this occasion *Ark Royal* had started with twelve Fulmars, but combat soon reduced the number serviceable to seven, then to five. However, by rapid re-equipment and repair the carrier maintained a permanent patrol throughout the day. There were times when only two aircraft were over the Fleet, but whenever a raid appeared imminent every fighter that could be made fit for action was sent into the sky.

The main onslaught on this day came shortly after seven in the evening. The sky was perfect for action, but a great cloud, rising from sea level to nine thousand feet, was closing in from the north, and hostile aircraft from Sicily were sighted approaching over its top to attack the convoy. The enemy force was made up of twenty-eight Junkers 87s and six Messerschmitt 110s in three separate formations. By that time the *Ark* had only seven Fulmars fit to send off, but they roared up into the sky, and as they lurched over the upper edge of the cloud they suddenly found themselves at close quarters with the enemy raiders. Although greatly outnumbered, they went straight for the center of the formations; one bomber immediately went down out of control, and several others, obviously damaged, screwed out of their formations. Even the Messerschmitts were mauled, and one went limping off with a smoke scarf dragging from its tail. This Fulmar dash broke up all cohesion of the attack, the opposition filtered away, and the Junkers jettisoned their bombs ten miles from the ships of Force H.

That day ended with two torpedo-bomber attacks on *Renown* and *Ark Royal*; the tin fish of the first attack went through the water between both ships without causing any damage, the second assault, made up of four torpedo carriers was engaged in time by a section of Fulmars that dispersed three of them and then ganged up on the leader who was sent down in flames.

Leading Airman R. N. Orme who was acting as a Fulmar observer was only nineteen years of age and had never been in combat against the enemy before, but although their plane was badly shot up and at times out of control, he kept his pilot well supplied with vital information so that they were able to evade the continued passes of Italian C.R.42 fighters. Then, having exhausted every alternative method of warding off stern attacks, he finally tossed wads of paper into the slipstream of their aircraft, which apparently gave the impression of some new and more terrible form of ammunition—the attackers twice ceased fire and broke away.

Then there was Petty Officer Airman L. G. J. Howard, another observer gunner who was seriously wounded during an engagement with a covey of C.R.42s, but continued to serve his gun and relay important information to his pilot, until the enemy had been shaken off. When the pilot reported Howard's wound and asked permission to bring him back to the carrier, the young gunner insisted that he was quite able to carry on and begged his pilot to continue the combat.

On May 24 the flag officer of Force H received information that the German battleship *Bismarck* and the heavy cruiser *Prinz Eugen* were at sea. *Ark Royal*, *Renown*, and the cruiser *Sheffield* steamed northwestward at high speed. It was at this time that the famous *Bismarck-Hood* engagement took place. The *Hood* hit the *Bismarck* several times, but then received a German shell in her magazine and because of a fault in her construction, blew completely apart. With that *Bismarck* broke off and tried to escape, but the British cruisers *Suffolk* and *Norfolk* continued to shadow her.

Other units of the home fleet began to gather and at 10 P.M. on the twenty-fourth, the aircraft carrier *Victorious* sent off nine Swordfish, led by Lieutenant Commander Eugene Esmonde, who later won the Victoria Cross posthumously for his gallantry in the ill-fated engagement against the German pocket battleships *Scharnhorst* and *Gneisenau* when they were making a dash through the English Channel.

This air-striking force attacked *Bismarck* with torpedoes at 11:30 and reported one hit on the starboard side amidships. Her speed was reduced somewhat but she was able to slip away from the two British cruisers that had been shadowing her for more than thirty hours. This caused dismay for some time, but at 10:30 A.M., May 26, a Catalina PBY flying boat of Coastal Command made contact, and reported that *Bismarck* was heading for the Bay of Biscay, but then the Catalina was hit by an antiaircraft shell from the pocket battleship and driven off. Once again the British Navy lost touch with their quarry.

Meanwhile Force H was steaming through foul weather but did keep a few aircraft in the air for antisubmarine spotting. By 7 A.M. of the twenty-sixth Admiral Somerville had hoped to be in a position from where he could fly off a reconnaissance patrol to intercept *Bismarck*, if she was really heading for Brest, but the weather grew steadily worse and Force H was delayed nearly two hours in reaching the patrol area. By 8:30 A.M. eight Swordfish were readied for take-off

although the wind was high and the huge green seas were breaking over the fore end of the flight deck that normally was sixty-two feet above the sea. The whole deck was drenched and dangerous, several aircraft slid from one side to the other while being "spotted" for take-off, and a number of mechanics were badly injured as they tried to hang on to the machines.

The leader finally took off with his wheels churning through salt water and the pilots who followed him flailed through a drenching spume and spray. As the carrier pitched in the heavy swell some of the planes had to make the run uphill and others went roaring down a tilted chute. No one expected any of them to get off, but one by one they charged through the storm and deck hazards and eventually reappeared as they fanned out on their allotted search courses.

At 10:40 A.M. *Ark Royal* received a signal that the Catalina had found the *Bismarck*, but the Swordfish patrol continued on as ordered since the position indicated was within the area being searched. At 11:24, a short time after the Catalina had been driven off, a Swordfish, piloted by Sub-Lieutenant J. V. Hartley with Sub-Lieutenant P. R. Elias as observer, reported the *Bismarck* in a position approximately 750 miles due west of Brest.

Seven minutes later another Swordfish, north of the shadower, also made contact and from that moment on *Bismarck* was never out of sight—her doom was sealed. There was a critical moment when both shadowers were running out of fuel with barely enough left to return them to *Ark Royal*. To make certain contact would be maintained, two Swordfish, fitted with extra fuel tanks to give them ninety minutes of additional flying time, were flown off. Within an hour they had gained touch, and the others returned just in time with only a whiff of gasoline in their tanks. This shadowing patrol was carried on all night, in spite of rain and great curtains of mist. For a while one of the Swordfish pilots lost contact and after circling in search came upon what he believed to be a British vessel, and signaled, "Where is the bloody *Bismarck*?"

The enemy provided the answer with a salvo of antiaircraft guns, and thus gave away her position. Once the first contact had been made, *King George V* and *Rodney* set out after the German, but the enemy battleship had too great a lead and unless her speed could be reduced in some manner, it was obvious that she would escape, as had *Prinz Eugen*. The only hope now was a torpedo attack from the aircraft of *Ark Royal*.

Plans were set up for such an attack, but first the reconnaissance patrol had to be brought in and stowed away, which also was a hair-raising operation. Since these ten planes had been away in various areas, they returned at varying intervals. The winds were still high, the sea was in a great turmoil, and the deck was now rising and falling a distance of fifty-six feet. Drizzle and low clouds made visibility very difficult, although the carrier was making only eight knots since she was steaming into a forty-knot wind. Some of the patrol planes had to be waved off three and four times, and when they finally did hit the deck, it took unbelievable measures by the crew to prevent their being blown overboard.

Nevertheless, as soon as the shadowing group was hangared safely, an air-striking force of fifteen Swordfish was brought up and spotted for take-off. Force H was well to the north of *Bismarck* and steaming a parallel course to her, but whenever the *Ark* was turned into the wind to fly off her aircraft, she inevitably lost station on the enemy, and on resuming her easterly course had to employ her full power of thirty knots. For a time the wind was so strong the flight deck officer had to order the planes below, after they were fueled and armed. They were not able to risk a take-off until 2:50 P.M. One Swordfish had to return because of an engine defect.

At this point a new hazard arose. Unknown to the air-striking force, *Sheffield* had been detached from Force H to make contact with *Bismarck*. As the torpedo bombers approached their objective through scud and storm they suddenly sighted a cruiser below that they mistook for the *Bismarck*, and all dived for the attack. The staff of *Sheffield* sensed the mistake, went into high-speed avoiding action, and, fortunately, none of the torpedoes hit her. One Swordfish pilot who recognized the British cruiser as soon as he released his torpedo, signaled later, "Sorry we wasted a kipper on you, sir."

All this points up the weather conditions. The Swordfish had to return to *Ark Royal*, refuel, and load up with new torpedoes. By then landing conditions were even worse and the deck control officer had to lash himself secure before he could risk standing up to wave in the returning planes. Three aircraft crashed on the flight deck when an unruly stern smashed their undercarriages, and this wreckage had to be speedily cleared away before the others could be taken on, but luckily there were no casualties among the crew.

By seven o'clock a second air-striking force, led by Lieutenant Commander T. P. Coode with Lieutenant E. S. Carver as his observer,

was prepared. Lieutenant Commander J. A. Stewart-Moore was second-in-command. Their task was most important and every man in the formation must have realized it. If *Bismarck* was to be stopped, only they could do it now. The prestige of their service had received a severe jolt—the sinking of Britain's greatest battleship, *Hood*. Dunkirk had been a shock, and the hapless history of Norway had cut into hopes for a victory over Hitler's might, but the loss of *Hood* and the realization that *Bismarck* was still at large, left an undeniable dread for the future.

*Ark Royal* clawed around into the almost hurricane wind, and the fifteen Swordfish, spotted wing tip to wing tip, were only held aboard by superhuman efforts. The scream of engine exhausts and harsh voices coming from power megaphones were added to the howling of the storm. Knouts of spray lashed off the fuselages as the flight deck rose and fell with the violence of the storm. The air officer huddled on the bridge and flipped fast signals to the flight deck officer the instant he felt a plane might risk a take-off; rain-drenched men huddled under the wings, ready to yank the chocks from the wheels when the little green flag fluttered; drill and discipline were at their absolute best. Although daring the gale, the animosity of the deck, and the possibility of engine failure, every Swordfish got off safely.

By this time *Sheffield* had again made contact with *Bismarck*, so Commander Coode's air-striking force first established touch with the British cruiser. Visibility was still restricted by low clouds and unending rain, and the Swordfish pilots did not see *Bismarck* until they were on top of her, shortly before nine o'clock, and after they had been searching for nearly two hours. Now the temperature dropped and some pilots reported that ice was forming on their wings, but Commander Coode circled his target for twenty minutes, maneuvering for a position from which to make the attack. Every time a Swordfish could be identified through the tatters in the cloud, the batteries of antiaircraft guns aboard *Bismarck* snarled at it.

But before an assault formation could be set up, the air-striking force became dispersed in a thick bank of cloud and Commander Coode had to order his pilots to attack as best they could, singly, in twos, threes, or fives. Once the torpedo bombers came out of their cover for the run-in, *Bismarck's* antiaircraft fire was more intensive and accurate, and several planes were forced to turn away before they reached torpedo range. However, all eventually went in, and, according to their commander-in-chief, "their attacks were pressed home with



a gallantry and determination that cannot be praised too highly."

Sub-Lieutenant A. W. Duncan Beale who lost touch with his sub flight, returned to *Sheffield* to obtain a new bearing on the enemy. He then flew back by himself, carried out a resolute attack from ahead of *Bismarck* in the face of heavy fire and scored a hit amidships on the port side with his torpedo.

Five aircraft of Commander Coode's force were hit—one came back with 176 holes in the wings, and pilot and gunner both wounded—but all the planes returned, the last one landing in the gathering dusk at eleven o'clock. They had no idea what they had accomplished for observation was so difficult, no airman would claim an actual hit, but as they climbed down from their machines and the observers made their individual reports, it was clear that the results were more successful than supposed. It was established later that *Bismarck* had been hit on the port side and then on the starboard quarter. A possible hit on the port quarter was reported finally, and a signal received shortly after 11 P.M. explained that the enemy ship had made two circles at slow speed and was then seen staggering off to NNW out of control. It was obvious that one of the hits scored by *Ark Royal* Swordfish had put *Bismarck's* steering gear out of order so that she could not hold her course with the wind and sea astern.

"This was a result," wrote the commander-in-chief, "which the *Ark Royal* and her aircraft crews had well earned and which ensured my being able to bring the *Bismarck* to action the next morning."

During the night a flotilla of five destroyers attacked *Bismarck* and scored three hits with torpedoes. She was stopped for a time, but finally got under way again, limping along at eight knots. She was still capable of heavy and accurate gunfire, however.

Although the fate of *Bismarck* was inevitable, the Swordfish crews continued to fly. At 4:30 A.M., May 27, a lone reconnaissance aircraft was sent off *Ark Royal*. The early morning was pitch black, the wind had gusts up to forty-eight knots, and there was still violent movement on the flight deck, so the carrier reduced her speed to six knots. The Swordfish rose almost vertically alongside the island bridge, and vanished immediately into the darkness. It bored through the rain and the crew searched through an inky black area on the northern horizon, but failed to find *Bismarck*. The pilot returned, refueled and went off again, and again failed to discover a trace of the enemy raider, but on the third attempt was successful.

When dawn had wiped off the sky, the wind shifted to the north-

west and more air activity was planned. Twelve Swordfish that had been readied before daylight were flown off, and their course was aided by the fact that the destroyer *Maori* was still in visual contact with *Bismarck*. By 8:45 *King George V* and *Rodney* had closed in on the enemy. The air-striking force reached the scene of action just as the guns of the British battleships were opening fire. The high splashes from the shells made it impossible for the torpedo bombers to dive on their target, so they closed in at a reasonable altitude and watched one of the last battles of the big ships. An air gunner reported later: "By the time we got there the *Bismarck* was so battered you couldn't distinguish her shape. She looked like a dark mass of junk floating on the water."

By nine o'clock *Bismarck* was all but out of control, although her guns were still in action. An hour later she was completely silenced, a total wreck, on fire fore and aft, and wallowing helplessly. The air-striking force was about to finish her when the *Dorsetshire*, which had been ordered to torpedo her at close range, reported that *Bismarck* was sinking. She went down gallantly with her battle ensign still flying.

When the Swordfish returned to their ship and were about to land on, a Heinkel 111 approached under cover of a low cloud. *Ark Royal* was in an almost defenseless position for she had turned into the wind, and under the circumstances, her course could not be altered, nor could she use her 4.5 guns. So *Renown* and *Sheffield* moved in and opened fire on the Heinkel which dropped two large and five smaller bombs from about four thousand feet and then turned away into a cloud with smoke pouring from her starboard engine. The bombs fell into the sea four hundred yards from the carrier and all the Swordfish landed safely.

*Ark Royal* and her air crews returned to Gibraltar on May 29, and on her arrival the garrison hired every boat they could find to go out and cheer her to her berth. The Black Watch pipers skirled as never before, and the small craft clustered below the carrier as thick as floating wrack, with soldiers, sailors, and airmen standing up shouting and waving to welcome *Ark Royal* home.

There was small respite after the victory. *Ark Royal* was soon returned to her operations with Force H in the Mediterranean to carry out air reconnaissance and to cover convoys. Her Swordfish made a night bombing attack on the Alghero airfield on the west coast of Sardinia and scored direct hits on hangars and buildings. In a later

raid they started intensive fires in the cork woods near Tempio Pausania in the north. The Fulmar fighters destroyed a number of Italian shadow planes and one large Junkers-52 transport airplane. Their last victim was a Cant-506 that was sighted when three Fulmars were on patrol over the force. Within ninety seconds after being warned the Fulmar pilots gave the "tally-ho" response and in short time the Italian torpedo bomber was "splashed" as she tried to make the African coast.

War is no respecter of heroism or tradition, however, and the day arrived when *Ark Royal* operated her aircraft for the last time. On the afternoon of November 13 she was steering toward Gibraltar in company with *Malaya*, *Argus*, *Hermione*, and seven destroyers. The weather was fair and at 3:25, when the force was thirty miles from Gibraltar and in sight of The Rock, twelve aircraft were flown off for a training exercise; fourteen more were waiting to land on.

At 3:41 when the last of the returning Swordfish was being recovered, there was a loud explosion under the bridge of *Ark Royal* on the starboard side. This plunged the interior of the ship into darkness, and she whipped so violently that five aircraft waiting to be sent down to the hangars, were thrown into the air three times. All hands were piped to action stations.

The torpedo that caused the explosion was fired by the German submarine U-81, commanded by a Lieutenant Guggenberger. No one aboard the carrier had seen her periscope or the torpedo track. The blast of the torpedo, coupled with the eighteen-knot speed of the carrier, caused severe damage below, but only one member of the ship's company, Able Seaman E. Mitchel who was asleep in his quarters, was killed.

The carrier took on a list of ten degrees immediately after the explosion and within three minutes was over to twelve degrees. Captain Maund's first thought was to stop the ship, and he gave orders to reverse the engines, but all the telegraphs to the engine room were jammed, and it was impossible to communicate by telephone with any other part of the ship. The loud-speaker system was out of commission and the bridge was completely isolated.

It was essential that the ship should be stopped, so the captain left the bridge and hastened to the engine-control room where he gave the necessary orders to bring the carrier to rest. He learned that the starboard engines were out of action, but that there was no damage to the port or center engine rooms. He then gave orders to flood the port

compartments, and to pump fuel from the starboard to the port tanks in the hope of counteracting the steadily increasing list. He stationed a chain of seamen to establish communications between the engine room and the flight deck while preparations were made for emergency telephones to be rigged to replace the human chain.

Because of the steep list it was not possible to fly any aircraft off the deck. The twelve that were in the air at the time of the explosion were sent on to Gibraltar. Meanwhile, the destroyers circled around, dropping depth charges to trap the German submarine, or at least hobble her chances of firing a second torpedo salvo.

By four o'clock *Ark Royal* had heeled over to an angle of eighteen degrees and the list was increasing. There was no way of knowing how long she would float, and fearing she might capsize, Captain Maund decided to disembark every man possible, retaining only those who might be of use in keeping her afloat. The destroyer *Legion* was called, and by skillful handling Commander R. S. Jessel brought her alongside the port quarter, taking care to keep her stern clear of the *Ark's* port propeller, which was now visible near the surface of the water. He had also to avoid the carrier's radio masts that projected horizontally from her sides with no power available to raise them.

In a short time 1540 officers and men were transferred to the *Legion*—the paymaster-commander appeared on deck carrying two suitcases containing the ship's money, some £10,000 in each. Few men had time to save personal property and many of them had to leave stacks of Christmas presents they had bought in Gibraltar to take home on their next leave. One petty officer managed to snatch up twenty pairs of silk stockings he was taking home for his wife, and these were distributed about his person in strange looking wads. A number of canaries were aboard and these were released in the hope they could fly well enough to make land. Cats and dogs were taken tenderly over to the *Legion*, all of them barking or meowing their enthusiasm for, or objections to, the disturbance. Some of the larger dogs had to be put aboard emergency rafts and left to float about until one of the destroyers could take them aboard.

The destroyer cast off at 4:48 and, although she had more than ten times her normal complement on board, she continued to hunt the submarine and carry out her depth-charge attack for more than six hours.

Back aboard the stricken carrier everything was being done to save the ship. Portable pumps were mounted, auxiliary lighting furnished,

and the extent of the damage ascertained. The center boiler room had flooded quickly and water had even reached the starboard engine room, but the most serious damage was the complete loss of feed water. Due to this, all power failed, and the situation worsened steadily. The destroyer *Laforey* was therefore signaled to come alongside to provide water and enough electric power for the pumps and some of the lights.

Steam was gradually raised again, the dynamos and steering engine were brought into action once more, and *Laforey* was cast off. At 7:30 a chartered tug arrived and soon had the *Ark* moving ahead at about two knots although there was a full knot current running against her. The counterflooding had reduced the list considerably and for a time there seemed to be some hope of getting steam on the port shaft; everyone was confident that in a short time *Ark Royal* would be steaming into Gibraltar harbor, and these hopes were raised still higher by the appearance of the Admiralty tug *St. Day* which was made fast on the port side to aid in the towing.

When expectations were at their highest, a fire broke out in the port boiler room at 2:14 on the morning of November 14, and destroyed any chance of raising steam for another two hours. Salvage work came to a standstill, the dynamos stopped, the lights below decks went out again, and the steering engine became useless. The list was now twenty degrees and it was almost impossible to stand on the decks. *Laforey* boldly moved alongside once more and electric power was made available for the pumps and some of the lighting. Optimism rose again for a few minutes, but the pumps seemed to have little effect, the list increased ominously. *Laforey* and *St. Day* were ordered away and told to continue the tow, and together they increased the speed to five knots, but Gibraltar was still twenty-five miles away.

By four o'clock the ship had heeled to twenty-seven degrees. The crew aboard had done all that seamanship, resource, and human endeavor could, but it was plain they were fighting a losing battle. For the past forty minutes the port boiler room had resembled an inferno, the casings were red hot and the stokehold choked with fumes. Senior Engineer Lieutenant Commander A. G. Oliver had worked courageously but was finally overcome by fumes and heat. Two of his stokehold men fainted and had to be given artificial respiration. Four times the stokers fought and extinguished fires and continued to provide steam until further efforts were useless. They were all ordered topside. Other engineers had stayed with the dynamo in the port and

center engine rooms where they had worked hour after hour without ventilation, and in a mist of superheated steam.

When it became certain that there was no hope of saving the carrier, every available rope was taken forward and secured inboard, abreast of *St. Day*, so that the 250 men still on board could leave quickly and cross over the tug to *Laforey*.

The *Ark* was heeling more rapidly and the men could move along the decks only by crawling. The few men topside were ordered to get to the tug, and those below were ordered up. Captain Maund was the last to leave, and his men gave him three hearty cheers as he slid down a rope to the tug. By that time, 4:30 A.M., the list was thirty-five degrees, and the lower hangar deck on the starboard side was under water.

As *Laforey* was about to cast off, the Flag Officer, Force H, arrived alongside in a motor launch to aid *Ark Royal*, but no human effort could save her now. At 6:13 A.M. she turned over, remained bottom upward for a few minutes and then, fourteen hours after she had been torpedoed, disappeared from sight.

The loss of the famous carrier was announced in London at one o'clock that afternoon, news that must have embarrassed the German Ministry of Propaganda. It had claimed to have destroyed *Ark Royal* more than two years before. But Dr. Goebbels did not proclaim the U-boat's success until twenty-four hours later, and it is significant that the German announcement quoted the British Admiralty report in confirmation.

Gibraltar was silent that November morning, the welcoming pipers waited in vain, for *Ark Royal* was on the bottom some twenty-five miles away, but to this day airmen say they can mark her grave when the waters of the Mediterranean are still.

## CHAPTER III

### TARANTO vs. MALTA

THE PREVIOUS chapter has shown how a small force of British carriers operated in the opening months of the Second World War when the program was loose and varied since there were no precedents to follow. It was all new, both to the ships' companies and to the flying men, who were burdened with a very complex aerial warfare, and flight-deck operations had to be contrived as various situations arose.

The aircraft carriers available were assigned to convoy escort, anti-submarine patrols, attacks against enemy surface raiders, and actually ordered to provide support for amphibious operations. As was to be expected, mistakes and gross errors were made. The carriers were sacrificed on tasks that they were not equipped to attempt, and since Hitler's Germany had no complete naval force, in the strict sense of the phrase, there was small opportunity for the Royal Navy to learn how the carrier would or could operate in massed naval action.

Germany had a fair destroyer force and a number of so-called pocket battleships—battle cruisers to be exact—but no complete naval force which could be sent against an opposition force of equal power. What naval might she possessed was used in unproductive attempts at high seas piracy, hit-and-run raids, in a continual threat to entrap small forces, or was huddled away in sheltered bays while repairs or refit operations were made. Only in isolated and historical instances were the pocket battleships sent out to earn their keep.

However, when the ill-fated Norwegian campaign had run its course, the British Fleet was withdrawn from these hazardous waters, and once the British Expeditionary Force had been evacuated from Dunkirk, there were no European military operations to support; the remnants of the British Army either stood guard against threatened

invasion at home or, as each division was re-formed and brought up to strength, it was rushed out to the Mediterranean.

Mussolini had bided his time and when it looked as though Germany was bound to win, he threw in his lot with Hitler. This created a new phase of war for the British Navy, for it had long been known that Il Duce had a fleet that, on paper or in the pages of *Jane's Fighting Ships*, might provide considerable opposition to the forces still available to the Admiralty.

In fact, the Mediterranean Fleet faced a period of naval operations against a far superior enemy, and, coupled with this, one of its chief bases, Malta, was within easy bombing range of land-based aircraft in Italy. The British Fleet was superior in one respect only; it possessed an aircraft carrier, H.M.S. *Eagle*, that was soon joined by H.M.S. *Illustrious*, the first of Great Britain's new fleet carriers. Mussolini had no aircraft carriers.

Although Force H had been formed and based at Gibraltar, it was now obvious that the main Mediterranean Fleet would have to concentrate in the eastern Mediterranean and use Alexandria as its base. Broadly speaking, Britain held both ends of the Inland Sea, and Italy was in control of the central portion. It was apparent that something would have to be done if the British were to stay in these waters, and her land forces were to command vital points in North Africa.

Two British convoys, carrying stores for the fleet, made an effort early in July 1940 to steam from Malta to Alexandria. The Mediterranean Fleet, under Admiral Sir Andrew Browne Cunningham, sailed out from Alexandria to pick up this merchant convoy. At the same time the Italian Fleet was ordered to escort a supply convoy that was destined for their forces in Libya.

The Italian Fleet of two battleships, sixteen cruisers, and thirty destroyers was first intercepted by the British submarine *Phoenix* that had been operating some distance southeast of Taranto, a seaport in Apulia, Italy, and only second in importance to La Spezia as a naval arsenal. The submarine warned the British surface force, and a long-range United States Martin reconnaissance aircraft flew out of Malta and shadowed the Italians until Admiral Cunningham made contact on July 19.

It is interesting to note that H.M.S. *Eagle*, an antique carrier built in the early 1920s, had recently joined Cunningham's force, and, although she had but seventeen Swordfish aboard that were manned by inexperienced pilots, she performed commendably. About noon of July 9



one of *Eagle's* "Stringbags" sighted the enemy fleet, and a striking force, armed with torpedoes, was launched a short time later. How ironical that an almost obsolete carrier bearing a squadron of untried airmen should be the first to engage in what could have been the first real naval action of World War II!

*Eagle's* torpedo bombers went after the Italians boldly, but missed the enemy's main fleet that had changed course to the southward, so they engaged a convoy cruiser with comparatively small success—some of this misfortune was later charged to faulty torpedo detonators, a factor that was plaguing all naval services using this weapon.

Admiral Cunningham's first surface-fleet contact was made during the same afternoon but his guns were at extreme range and nothing decisive was registered. A second striking force was launched from *Eagle* and this time one good hit was scored on a cruiser in the face of stiff antiaircraft fire. The attack was good, but the antitorpedo bulges (false sections of hull that detonate the weapon before it pierces the main hull) performed their function and the cruiser's speed was not slowed sufficiently for the British forces to engage. As a result the whole Italian Fleet was able to withdraw at good speed while their destroyers put down a covering smoke screen. Eventually they found the shelter of their harbor, and the protection of their land-based planes.

The main prize was lost, although a Swordfish from the deck of *Eagle* caught up with an Italian destroyer and sank her off the enemy coast. Success was denied for various reasons. The enemy fleet could put on terrific bursts of speed, a factor that made it difficult for Navy airmen to bring the target into their sights, and the pilots and observers were inexperienced, the products of a very rapid expansion of Britain's new Fleet Air Arm. However, from this point on, an intensive program of practice operations in both day and night flying was ordered, the torpedoes were checked and checked again; nothing was left undone to prevent another such unfortunate display.

The R.A.F., in new long-range Martin reconnaissance machines, surged out of Malta on the hour to photograph every move being made at Taranto and Augusta, another Italian naval base in Sicily. The Swordfish were equipped with long-range tanks, and the first of these planes arrived aboard H.M.S. *Illustrious*, one of the newer carriers. By the middle of October 1940 the pilots were ready, the planes were all spotted, and a new excellence in night-flying operations, by both air crews and deck parties, was reached.

Plans were under way to stage an attack on the Taranto forces to celebrate Trafalgar Day, October 21, but a few days previously a fire broke out on the hangar deck of *Illustrious* that damaged a number of aircraft. Weather conditions and the lunar system held off the plans until the night of November 11, Armistice Day, when the moon was three-quarters full. The most recent reconnaissance photographs disclosed that five battleships were at anchor, as well as several cruisers and destroyers. Just before the force sailed, an R.A.F. evening patrol reported that a sixth battleship had been docked at Taranto.

At this point it was learned that *Eagle* could not take part; her fueling system was unsatisfactory as a consequence of repeated near misses by Italian aircraft, so five of her Swordfish and a number of her aircraft crews were transferred to *Illustrious*, and the combined fleet sailed from Alexandria on November 6 for the Armistice Night celebration.

Shortly after nightfall on November 11, Admiral Cunningham sent *Illustrious*, and a screen of four cruisers and four destroyers, to a fly-off position 180 miles from the Taranto area. At 8:30 a striking force of twelve Swordfish, led by Lieutenant Commander K. Williamson, roared down the slim deck of the carrier and zoomed into the Mediterranean night. They formed up about eight miles ahead of their carrier and by nine o'clock were well on their way to the Italian port. A second air-striking force, cut to nine Swordfish, was spotted to take off at shortly after 9:00 P.M. Three others that might have gone had had the misfortune to land in the sea on returning from practice flights. Only eight of the second force became airborne, since one was damaged in a deck collision while taxiing to its position and had to be rushed to the hangar for repairs.

The pilot, Lieutenant E. W. Clifford, who was outraged at his bad luck, followed his plane below and made every effort to have the damage repaired quickly. At the same time his observer, Lieutenant G. R. M. Going, darted up to the bridge to plead with Captain Denis Boyd for permission to go if their aircraft could be repaired in time.

"The bashing about isn't too bad, sir," he explained.

"If it's bashed about at all, you shouldn't be taking it to Taranto," the skipper argued. "I admire your spirit, but . . ."

"It's nothing serious, sir. Just a bit of wing tip. We could hack off the battered part."

"Get off my bridge. I'm busy. If you want to go in that condition, you have my sympathy, but you can go. I don't suppose it is any worse than what you'll come back with," said Captain Boyd grinning.

At 9:55 the repaired Swordfish was hauled up to the flight deck again, and Clifford and Going took off alone. Captain Boyd gave them a stiff salute as they hoiked off *Illustrious* and headed for Taranto, now only 150 miles away.

At 10:00 the first striking force was approaching the Italian base. It should be explained that of the twelve aircraft involved, six carried torpedoes, four were armed with bombs and two were loaded with flares and light bombs. Commander Williamson's observer, Lieutenant N. J. Scarlett, "keeping the book," suddenly realized that the promised good weather was deteriorating. As they neared the port they ran into a thick cloud.

"We'd better split up for a minute, eh sir?" he was heard to suggest. "We can't keep touch in this muck."

Williamson nodded his assent and the Stringbags spread out for safety. They continued on in this manner and just before eleven o'clock spotted the first glares produced by the flare-dropping planes.

"Bloody good!" Lieutenant Scarlett said and beamed as he spotted the line of eight flares planted accurately along the eastern side of the harbor.

The second flare-dropper put a couple of bombs into an oil storage depot, and then, to make sure everything would go up as planned, dropped several incendiaries into the debris. This produced such a glare that no one knew for some time whether the storage tanks had been hit, or whether the uproar was caused by the flares, but the oil tanks gave excellent illumination for the complete program.

Williamson and Scarlett took the torpedo bombers into the main attack, and so ferocious was the leader's first charge, that he may have overdone it since his machine never returned. The remaining pilots started their approach dives, selected their targets and picked out the battleships as they lay at anchor. The prize, the battleship *Cavour*, was hit so severely she had to be beached. *Duilio*, another *Cavour*-class model that had been reconstructed recently at tremendous expense, was hit. She was seen the next day with her bow well under water. The battleship *Italia*, a *Littorio*-class vessel that was laid down in 1938, was damaged extensively. The 10,000 ton cruiser *Trento* took a direct hit by a bomb. Two destroyers, identified later as *Libeccio* and *Pessango*, were only slightly damaged by bombs, but two auxiliary vessels were definitely sunk, a seaplane base was badly mauled with one hangar destroyed, and the oil storage depot was a complete write-off.

Most of the attacking Swordfish had to risk the entangling cables of a tight balloon barrage, both going in and returning. The anti-aircraft fire was particularly heavy, for not only were the shore batteries turned on, but the warships, in self-defense, broke out every available weapon. However, eleven of the twelve planes returned and made safe landings aboard *Illustrious*.

Meanwhile the second striking force, now reduced to seven planes since one had had to return with engine trouble, went in for their attack. This formation was led by Lieutenant Commander J. W. Hale who carried Lieutenant G. A. Carine as his observer. Again the flare-droppers were sent ahead to illuminate the target. This attack was a replica of the first. The flare planes set the scene, bombed what was available, and the torpedo men went in and picked out the most valuable targets and apparently finished any leftover business. Only one of these Swordfish failed to return.

But the night was not yet over. Delayed as they were, Clifford and Going turned up to play their part. Lieutenant Clifford cut in deep and came in over the land east of the harbor. There was still considerable illumination but much smoke and murk, so he swung to port and dived on a line of destroyers moored together in the Mar Piccolo. They donated one stick of bombs to the destroyer force and dropped another on two cruisers they found anchored off the dockyard. Satisfied that some damage had been done, Clifford then turned to starboard, crossed the land and sped out to sea to seek his carrier. They touched down on the flight deck only half an hour after the others. *Illustrious* then turned east and rejoined her main force early in the morning of November 12.

Captain Boyd said some time afterward: "Although the proper function of the Fleet Air Arm may perhaps be the operation of aircraft against an enemy in the open sea, it has been demonstrated before, and repeated in no uncertain fashion by this success, that the ability to strike unexpectedly is conferred by the Fleet Air Arm. It is often felt that this arm, which has had a long struggle with adverse opinions and its unspectacular aircraft, is underestimated in its power. It is hoped that this victory will be considered a suitable reward to those whose work and faith in the Fleet Air Arm has made it possible."

Sir Winston Churchill said: "By this single stroke the balance of naval power in the Mediterranean was decisively altered. The air photographs showed that three battleships, one of them a new *Littorio*, had been torpedoed, and in addition one cruiser was reported hit and

much damage inflicted on the dockyard. Half the Italian Fleet was disabled for at least six months, and the Fleet Air Arm could rejoice at having seized by their gallant exploit one of the rare opportunities presented to them."

Sir Winston also pointed out an ironic touch in that the Italian Air Force, at the express wish of Mussolini, had taken part in an air attack on Great Britain on that same day. An Italian bomber force, escorted by about sixty fighters, attempted to bomb Allied convoys in the Medway, the estuary of the Thames and Medway Rivers on the east coast. They were intercepted by British fighters, and eight Italian bombers and five fighters were shot down. It was their first and last such intervention, and, as Mr. Churchill commented wryly, "They might have found better employment defending their fleet at Taranto."

As the woeful year of 1940 came to an end, somewhat relieved by the action at Taranto, new carriers and aircraft arrived to reinforce Admiral Cunningham's fleet. H.M.S. *Indomitable*, another of the *Illustrious* class, 23,000-tonners with 750-foot flight decks, turned up with ten new torpedo-carrying aircraft, the Fairey Albacores—also biplanes that had been designed as the successor to the heroic Swordfish. When the Fairey Albacore carried a crew of three men it could be used on long-range reconnaissance. As a torpedo plane, the Albacore, like the Swordfish, carried two men. It was powered with a 1065 hp. Bristol Taurus engine, whereas the Stringbag had only a 650 hp. Pegasus engine. In addition to the improved torpedo bombers, *Indomitable* also brought thirteen new Fulmar fighters.

But matters were still dismal for most British forces. By March 1941 the German invasion of Greece was having continued success, and General Sir Archibald Wavell's army in North Africa was cut drastically to supply a large force to oppose Hitler's shock troops. These troop transports were entrusted to the Royal Navy, and the follow-up supplies also required strong naval escort since there were many Italian submarines in that area. German and Italian land-based aircraft were continually in action or available, and there was the constant danger that what was left of the Italian Fleet might stage a rapid thrust from bases on the western shore of the Adriatic in attempts to intercept and sink these supply convoys going to the aid of Greece. The Italian Navy was sadly in need of a victory, and a successful attack on a helpless convoy might provide such a boost.

As a matter of fact, on the evening of March 27, 1941, there was

such a report, one that suggested that the Italian Fleet had made a move with that idea in mind. A British aircraft flying from Malta sighted a group of Italian cruisers steaming eastward, obviously making a dash for one of the convoys. A British cruiser force, under Vice-Admiral Sir Henry Pridham-Wippell, was already in a position south of Crete to furnish cover for this convoy. Admiral Cunningham sailed from Alexandria with his battleships and H.M.S. *Formidable*, another *Illustrious*-class carrier. As things turned out, this was a fortunate move, for by the morning of the twenty-eighth the reports and rumors eventually proved that the Italian cruisers, supported now by Italy's most modern battleship, *Vittorio Veneto*, were uncomfortably close to Admiral Pridham-Wippell's cruiser force.

*Formidable* assumed the job of air-search and launched four *Albacores* and one *Swordfish* early in the morning of the twenty-eighth. They were hardly off the deck before anxious radio reports began to crackle through, indicating the enemy had been sighted. These first messages were hurried and garbled. It was difficult to learn just how many vessels of the Italian force were out of their shelters, but as the observers settled down, the messages were more concise and it was clear that there were three separate groups ahead, one composed of *Vittorio Veneto* and her screen, the other two made up mainly of cruisers.

Aboard the commander-in-chief's flagship where all reports were analyzed, the situation appeared to be serious. Pridham-Wippell's cruisers were in a position where they might be caught between the gunfire of the two enemy forces, the battleship to the northward, and four cruisers to the westward. Once more, Admiral Cunningham realized that there was only one move to make, and it would have to be made by the aircraft off *Formidable*; *Vittorio Veneto* would have to be nudged out of the play, slowed up, or at least given a few hornets at which to swat.

Lieutenant Commander W. H. J. Saunt led a spearhead striking force of six *Albacores*, escorted by a brace of *Fulmars*. After thirty minutes of search Pridham-Wippell's force was first spotted and then the Italian battleship nearby, so Commander Saunt moved into position off her starboard bow and just as the torpedo planes were ready to peel off for the attack, two *Junkers 88s*, two-engined aircraft outfitted as day-and-night fighters, roared into the scene. The *Fulmars* took up the challenge and for a few minutes there was a wild melee above the Italian battleship. The German aircraft were no match for

the highly maneuverable Fulmars, even though the Junkers outgunned them and had two flexible gun turrets—one of the German machines was shot down into the sea, the other driven off, leaving the air clear for Commander Saunt and his torpedo planes.

This time the peel-off was beautiful. The planes were down to almost sea level when the battleship and her four-destroyer screen sent up an intense antiaircraft curtain. The *Vittorio Veneto* also fired her fifteen-inch guns into the sea at minimum range to set up columns of splash barrage. An aircraft that plowed into one of these would disintegrate as though it had collided with a stone lighthouse, but Commander Saunt's Albacores evaded the shell splashes and closed in to release their torpedoes from about eight hundred yards.

The sleek Italian battleship went into a wide turn to starboard and took violent evasive action; she wriggled, jinked, and moved like a barracuda but one of the British torpedoes caught her and she started to lose speed. The Albacores had fulfilled their mission; *Vittorio Veneto* broke off the engagement and turned for home; Admiral Pridham-Wippell's cruiser force was slipped from a deadly trap; and every Albacore and Fulmar returned safely to *Formidable*.

At the same time, not to be outdone, three Swordfish from the Maleme airstrip in Crete, also took a hand in the battle. They failed to encounter the battleship, so vented their spleen on a group of three cruisers, one of which was *Bolzano*, a modified *Trento* type of ten thousand tons. The Stringbag pilots did their best, even claiming one hit, but postwar investigation disclosed that the cruiser had not received a scratch.

This initial action set the stage for what was known as the Battle of Matapan. The battleship *Vittorio Veneto* presumably was limping northwest toward her home base; the two Italian cruiser squadrons were steering similar courses, but fully thirty miles ahead of the battleship on either bow. The four cruisers of Pridham-Wippell's force were moving to join Admiral Cunningham's battle fleet that was now some sixty miles astern of *Vittorio Veneto*, but sixty miles is a great distance between vessels that are capable of twenty to thirty knots, and there was small chance of catching up. Although the Italian battleship had been hit, her damage-control force had worked manfully, and she was capable of a speed that assured her escape, unless the Albacores from *Formidable* could make another attempt to halt or slow her down.

With this in mind, a second striking force of three Albacores, two

Swordfish, and two Fulmars was set out on the flight deck, and launched shortly after two o'clock in the afternoon. They were led by Lieutenant Commander J. Dalyell-Stead and at 2:24 found the battleship south of Cape Matapan. The British flight commander worked his way into the sun and then took his Albacore torpedo planes down to sea level for the attack. Once again, *Vittorio Veneto* writhed and wriggled and almost escaped, but one torpedo from Commander Dalyell-Stead's formation found its mark. Once the Albacores were clear, the Swordfish moved in for the kill. By now the battleship had steadied on her homeward course and the two Swordfish could take their time. They drew a true bead and scored two hits.

*Vittorio Veneto* was now reduced to thirteen knots and her captain ordered the two cruiser squadrons to fall back and protect her, which they did, steaming close attendance as she continued her homeward journey.

All of *Formidable's* aircraft, with the exception of that flown by Commander Dalyell-Stead, returned to the carrier. Once again, the leader of the attacking force apparently took the brunt of the anti-aircraft barrage.

Thirteen knots, however, still gave some assurance that *Vittorio Veneto* would escape, and Admiral Cunningham ordered a third air attack. Two of the shore-based Swordfish from Crete were still shadowing the Italian force, so *Formidable* launched every aircraft available; six Albacores and two Swordfish were armed with torpedoes and again Lieutenant Commander Saunt led them off into the blue-gray dusk of a Mediterranean twilight.

Just as the sun was setting, Commander Saunt's force went in and was hammered by a tremendous ack-ack barrage from every ship in the flotilla. This flaming retaliation could be seen by the men aboard Vice-Admiral Pridham-Wippell's cruisers, twelve miles away; as the sky was crisscrossed with streams of varicolored tracer, and the oblongs, triangles, and squares were continually blocked in with the flame of shellfire, as in some fantastic game.

The barrage was so intense the torpedo force was unable to attack in squadron formation and had to split up and go in with individual thrusts, which added to the hazard somewhat, for in such independent approaches there was always the danger of collision.

But with all this courage and skill, the *Vittorio Veneto* was not hit during this third strike. The last Stringbag to go in put a torpedo smack into the side of the 10,000-ton cruiser *Pola* so cleanly and ac-



curately she was brought to an immediate halt. The Italian admiral ordered two other 10,000-ton cruisers, *Zara* and *Fiume*, to stand by, but these three unfortunates were caught later that night by Admiral Cunningham's force, and sent to the bottom. Nevertheless, *Vittorio Veneto* escaped and by daylight the next morning was in the sanctuary of her harbor and under the cover of Italian shore-based aircraft.

Successful or not, the Battle of Matapan shows another step in the development of carrier operations, fleet-air tactical moves, and the proper collaboration of air and surface forces. Many of the same moves, with more fortunate results, will have been noted in the hunt for the German battleship *Bismarck*. In the Matapan action the added flexibility that the naval aircraft of that day gave to the surface fleet can be more clearly seen. In this particular engagement in which the opposing forces found themselves, there could have been no action without the intervention of the carrier aircraft; the Italians were already too far ahead of Cunningham's battle fleet for any surface action, and had it not been for the damage inflicted by *Formidable's* torpedo planes, they could have retained that distance with little difficulty.

Again, the striking power of aircraft had been demonstrated and justified. In the first attack the *Vittorio Veneto* was hit, and her speed reduced somewhat. The second attack accomplished all a commander-in-chief could hope for, and when the Italian battleship was cut down to thirteen knots, the air arm had achieved a high objective. For a time it seemed that the battleship was doomed. Paradoxically, it was perhaps unfortunate that the third strike had hit and stopped a cruiser, since in the summary sinking of her and her standby cruisers, Admiral Cunningham was delayed. This gave *Vittorio Veneto* an added lead, but the destruction of three powerful cruisers was in itself a naval triumph that had been made possible by the single torpedo hit from a Swordfish. Without that, the three cruisers would have escaped, as did the remainder of the fleet.

Matapan gives us a rare example of tactical handling of an air arm by a commander-in-chief. Admiral Cunningham was served most faithfully. The reconnaissance pilots set up the picture on which the admiral could base his tactical plans; in the beginning there were incorrect, hurriedly sent, and vague reports, but in this violent school of experience these inadequately trained airmen learned quickly, and full credit is due them.

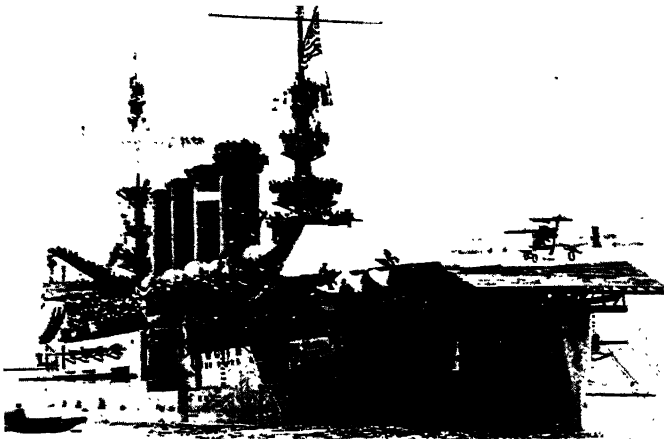
A comparison picture that was set up during the main action may be interesting to note. While *Formidable* was flying off her second

strike force, an attack was made by two Italian Savoia-Marchetti-79 torpedo bombers. *Formidable* was a perfect sitting-shot for there was no opportunity to take evasive action when launching heavy laden aircraft. The Savoia-Marchettis came in low on a good approach course, but *Formidable's* antiaircraft, and the close-range weapons on board her destroyer screen "encouraged" the Italians to drop their torpedoes at a range of two thousand yards. Under these circumstances, *Formidable* had little trouble in avoiding the tin fish and getting her aircraft off safely. To make certain of a hit, the attacking aircraft must ignore the opposition, hammer through the barrage, and only drop its torpedo when it is too late for the target to take evasive action.

But, as is so often the case, these victories had to be paid for in kind. It was not all beer and skittles in the Mediterranean, as can be gleaned from the history of *Illustrious* which had been commissioned in the early summer of 1940. This carrier had been the first to mount a search radar system to track enemy aircraft, and to have a fighter-direction officer aboard to direct the defense planes to the opposition targets. This co-operation was so successful that in one month fighter pilots aboard *Illustrious* intercepted and destroyed seventy-five enemy aircraft.

The Italians, in particular, nurtured an especial hate for *Illustrious*, not only for her fighter successes, but for her part in the epic of Taranto, and they used every device they could to wreak vengeance on her, some measure of which came early in January 1941. During an escort run while herding a convoy of sixty merchantmen laden with war materials for Greece, this British carrier had a very narrow escape in the waters near Malta. The whole force, convoy and escort ships, was attacked on January 10 by more than one hundred German and Italian bombers of all categories. The pressure of this raid was maintained for seven hours, with special efforts to finish *Illustrious*; the carrier was hit seven times by heavy bombs resulting in gruesome scenes of carnage. Eighty-three crew members were killed and sixty wounded seriously. Her steering gear was knocked out at one time, but her skipper, Captain D. W. Boyd, kept her afloat, and all available planes were launched.

*Illustrious* was exceptionally poor in her own defense, since she had only ten Fulmar two-seater fighters. This eight-gun aircraft had a maximum speed of 225 mph. in level flight, but in the necessary climb to get at the German and Italian bombers, its performance was

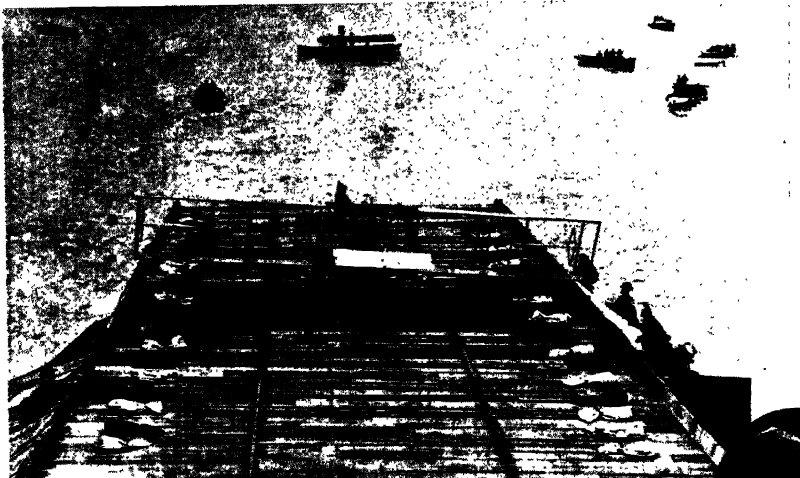


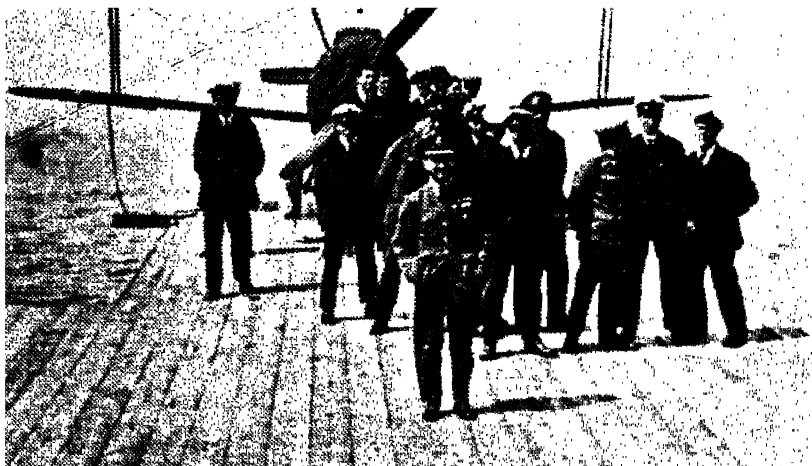
U. S. NAVY PHOTO

Above, I. The first successful landing aboard a naval vessel was accomplished by Eugene B. Ely, a civilian pilot flying a Curtiss pusher biplane on January 18, 1911. The USS *Pennsylvania*, a heavy cruiser, was fitted with a wooden platform built over the stern. A series of ropes and sandbags were stretched across the narrow space and acted as an arrestor gear. Later, Ely had the ropes removed, the airplane turned around and he flew off and landed on the Presidio in San Francisco from where he had originally started.

Below, II. The actual Ely landing, showing the limitations of the flight deck, the arrestor gear ropes held above the deck by lengths of 2 x 4 beams. The daring pilot touched down at a speed of 40 mph and had no benefit of head-wind, since the *Pennsylvania* was at anchor at the time.

U. S. NAVY PHOTO





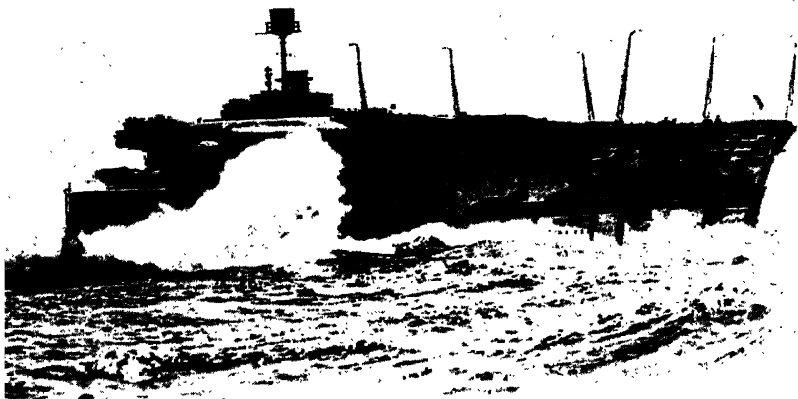
ROYAL NAVY PHOTO

ove, III. Britain's first attempt at carrier warfare. On August 11, 1918, a Sopwith Camel, launched from a barge towed by a destroyer, successfully took to the air and intercepted the German Zeppelin L. 53. Sub-Lieutenant Stuart D. Culley of the Royal Naval Air Service destroyed the enemy raider and then had to land on the water near the surface ship to be picked up by derrick.

ow, IV. Culley's improvised flight deck was simply a small wooden platform about 60 feet long and 15 feet wide, mounted on a navy lighter. It was towed at 30 knots by the destroyer *Redoubt* and the little fighter plane took off in less than 50 feet of runway. Here is shown the actual take-off while the lighter was under tow.

ROYAL NAVY PHOTO



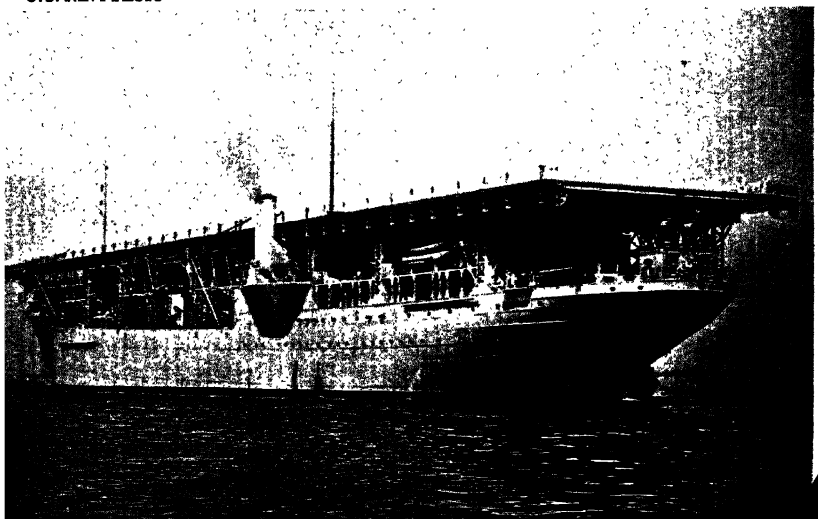


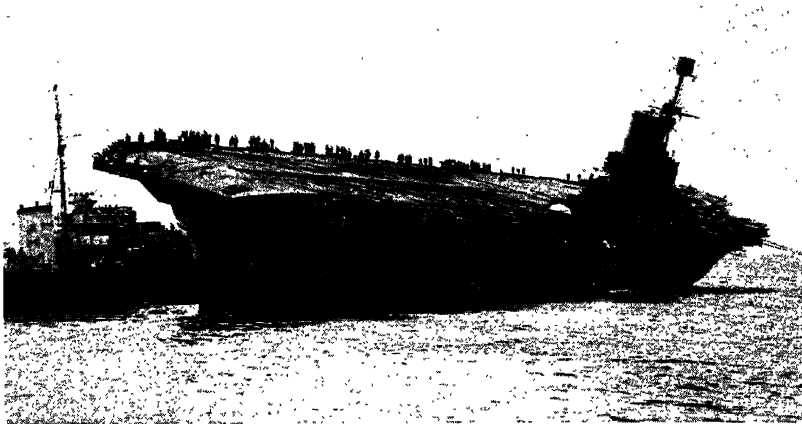
BRITISH INFORMATION SERVICE PHOTO

*Above, V.* One of the earliest carriers, Britain's *HMS Furious*. This vessel was laid down as a cruiser in 1915 but early in 1917 was modified for carrier operations after the earlier *Argus* had been put through many trials and experiments for deck operations. When completed for this work *Furious* carried two fighter flights, two reconnaissance flights and two torpedo flights or about thirty-six aircraft. She underwent many conversions over the postwar years.

*Below, VI.* America's first aircraft carrier, *USS Langley*. This vessel was laid down in 1911 as a fleet collier and served as such until 1920 when she was redesigned for carrier operations. Her flight deck measured 534 x 64 feet and she accommodated about fifty aircraft of varying types. Besides her flight deck she also had two cranes for picking up seaplanes.

U. S. NAVY PHOTO



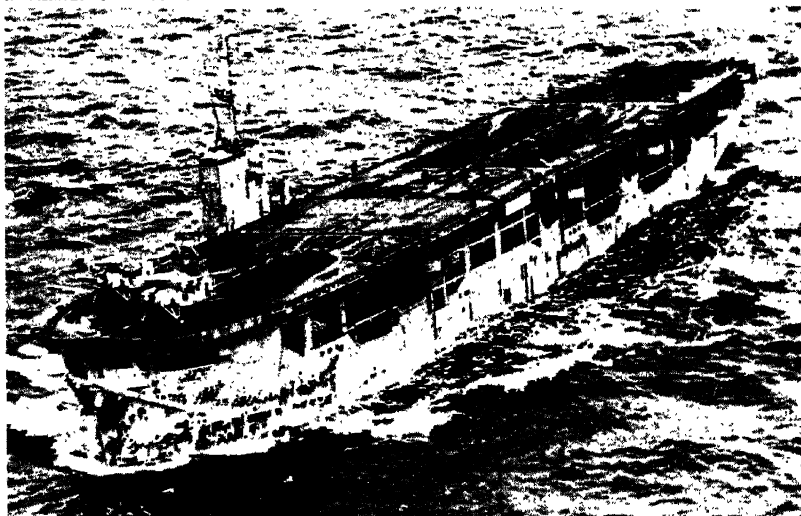


BRITISH INFORMATION SERVICE PHOTO

*Above, VII.* The last of the *Ark Royal*. After more than two years of continual action against the enemy, the legendary British carrier finally met her end when a torpedo holed her a short distance from Gibraltar. Heroic efforts were made to save her, but damage to her pumps and engine room denied her salvage operations that might have kept her afloat long enough to get her to a navy drydock. She went down November 14, 1941, the third British carrier to be lost in the early years of the war.

*Below, VIII.* A critical need during the Battle of the Atlantic was filled by a number of auxiliary carriers built on British merchant hulls. Here is the *HMS Ancyclus*, a typical "Woolworth" vessel of that era. They provided air cover for convoys and other groups in the 500-mile gap outside the range of shore-based aircraft.

BRITISH INFORMATION SERVICE PHOTO





U.S. NAVY PHOTO

*Above, IX.* By 1942 the torpedo plane was leaving its mark on naval operations. It probably brought about the end of the battleship, for it was a fleet of Japanese torpedo-carriers that sank the British capital ships, *Prince of Wales* and *Repulse*, December 10, 1941, off Singapore. From that date on the aircraft carrier became the Queen of the Fleet.

*Below, X.* The tragic phase of carrier warfare. On September 15, 1942, while engaged in covering the movement of supplies and reinforcements into Guadalcanal, USS *Wasp* which had also played an important role with the British in the defense of Malta was torpedoed. Here she is shown going down in a welter of flame and smoke.

U.S. NAVY PHOTO





U. S. NAVY PHOTO

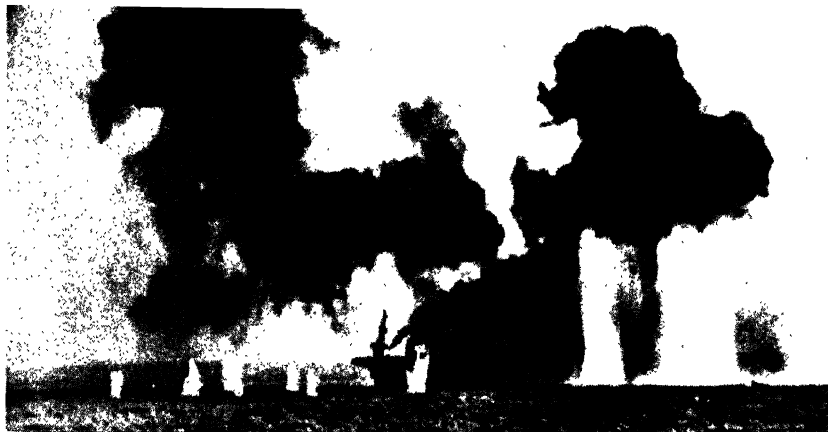
*Above, XI.* During the Battle of Santa Cruz, one of the classics of the Pacific war, both sides put on a gallant show. Here is seen action in which a Japanese bomb splashed astern of the USS *Enterprise*. There are two other planes in the smoke-storm of anti-aircraft fire put up to protect the carrier. The battleship USS *South Dakota* is also seen being covered by an unnamed destroyer.



*Left, XII.* Naval warfare encounters more than enemy aircraft and long range gunfire. On December 18, 1944, a typhoon struck an American task force in the Philippine Sea. Every ship of the force took a severe beating and several were lost. Here is seen the anxious work aboard USS *Anzio*, an escort carrier as seamen try to salvage wrecked planes, give first aid and prepare for outbreaks of fire.

U. S. NAVY PHOTO





**U.S. NAVY PHOTO**

*Above, XIII.* During the Battle of Leyte Gulf, a Japanese cruiser intercepted and shelled the USS *Gambier Bay*, an escort carrier. Every effort was made to elude the enemy gunners but eventually the range was cut to a minimum and she had all steering controls and power knocked out. The order to abandon ship was given and about 750 members of the crew of 854 managed to go over the side only to fight for their lives among a school of sharks.

*Below, XIV.* When Davey Jones takes a hand. Here we see USS *Langley* fighting for her life in a Pacific storm. This picture was taken from the deck of the USS *Essex*, an attack carrier of that period.

**U.S. NAVY PHOTO**





BRITISH INFORMATION SERVICE PHOTO

Above, XV. Action with the kamikaze suicide planes. Here is a British carrier engaged in operations off the Sakishima Islands, a few hundred miles off the Japanese mainland. All told seven such suicide planes struck British carriers during the Okinawa action, but none was sunk because they all had armored flight decks. None was out of action for more than two hours. None was withdrawn from action at any time. This whole mess was cleaned up within two hours and planes were soon operating again.

Right, XVI. The battle for the recapture of the Philippine Islands brought victory, glory and tragedy to the American forces. The gallant USS *Princeton*, a light carrier, took a direct hit from a Japanese dive-bomber on October 24, 1944. The bomb itself did little damage but a small fire started, made its way to a stack of torpedoes which exploded in the heat and started other more serious fires. Eventually she had to be abandoned and sunk.

U.S. NAVY PHOTO



reduced to well below 200 mph. The enemy planes could outstrip and outmaneuver the British fighter machines. Had the carrier launched Spitfires or Hurricanes, her story might have been different. As it was, *Illustrious* was fortunate to get into Malta, for the cruisers *Southampton* and *Gloucester* were also given a rare going-over; *Gloucester* was damaged slightly by a bomb that failed to explode, and *Southampton* received a bomb square in her engine room that started a serious fire. The crew fought the blaze heroically, but eventually it was out of control and the cruiser had to be abandoned. The convoy got through safely, but at an exorbitant cost to the fleet.

Once in Malta harbor, *Illustrious* underwent another series of heavy attacks, but the land-based Malta pilots shot down nineteen enemy planes. During that night, with the aid of a smoke screen, *Illustrious* sneaked out and made her way to Alexandria where she was found to be so badly in need of special repairs, it was decided to sail her to the United States for an overhaul. Her aircraft were turned over to General Sir Archibald Wavell where they played a leading part in the victories against the Italian Army in the Western Desert.

Fortunately, *Formidable* was now commissioned, and she steamed into the Mediterranean to replace the battered *Illustrious*, and was available for the Battle of Matapan.

Early in the war the British captured a number of German vessels, many of which were renamed, refurbished, and put to good use. One in particular furnishes a colorful page in the records of World War II. She was H.M.S. *Audacity*, which had started the war as the German diesel motorship *Hanover*, a vessel of 5600 tons with a speed of fourteen knots. She was intercepted and captured by H.M.S. *Dunedin*, and when the U-boat menace assumed critical proportions, she was converted into an escort carrier with a flight deck of 420 feet in length and 60 feet in beam, but with no island or hangar deck. The six Martlets she had on board had to be parked aft so that the foremost one had only 300 feet of runway for take-off. One critic of her type called her a Woolworth carrier, but this vessel was so satisfactory that it was said, by Sir Winston Churchill, to have become the model on which large numbers of these light escort carriers were later built.

At about this time the British were spreading their air and naval forces dangerously thin in providing coverage for important supplies being sent to Russia. Improved conditions in the North Atlantic, brought about by fighter-catapult merchantmen, longer-range antisub-

marine aircraft, more efficient depth charges, and the early development of the hedgehog system whereby depth charges could be fired well ahead of the attacking ships instead of being rolled over the stern, all conspired to drive the German raiders to less offensive areas. As a result the Bay of Biscay was shy of air coverage for the convoys sailing to Liverpool from Capetown and the west coast of Africa ports. Gibraltar could give only a limited escort for these convoys, and once they were out of range of shore-based aircraft, their only air protection was the occasional escort carrier, such as *Audacity*.

The Focke-Wulf bombers based at Bordeaux, and suspected of refueling at bases in Franco's Spain, were a great menace to the convoys. With such aid their reach into the Atlantic made them doubly dangerous for they not only could spot and bomb British shipping, but they could provide their U-boats with the information to "home" on these hapless targets.

During an outward-bound convoy between Britain and Malta that began on September 19, 1941, the Martlet pilots from *Audacity* found a U-boat fully surfaced, and ignoring the submarine's deck gun, machine-gunned it until the German skipper decided to submerge. The following night a pack of U-boats sank several small vessels in the convoy and the survivors had to be taken aboard a rescue ship, *Walmar Castle*. The next morning this vessel was bombed by a Focke-Wulf and set afire.

Two Martlets from *Audacity*, flown by Sub-Lieutenants N. H. Patterson and G. R. P. Fletcher, set upon the German raider, and after each pilot had put in thirty-five-round bursts, the Focke-Wulf lost its tail and plunged into the sea. This was the first F-W destroyed by an American-built, carrierborne airplane.

The remainder of this voyage was uneventful, but on the return passage with another large convoy the Martlets had to land on the short deck when the rise and fall of the stern was as much as sixty-five feet and the ship was rolling sixteen degrees; one plane skidded over the side and sank but the pilot was rescued.

During *Audacity's* second escort voyage in November the squadron leader, Lieutenant Commander J. M. Wintour, damaged a prowling Focke-Wulf, but was himself shot down and killed when a cannon shell passed through his cockpit. Sub-Lieutenant D. A. Hutchison then took over the attack on the Focke-Wulf that by then was in flames, and made certain it went into the sea completely out of control.

That same afternoon there was another alarm but there was only

one serviceable plane aboard, another had a badly bent propeller, but Sub-Lieutenant E. M. Brown volunteered to fly the cripple, so the two Martlets were sent aloft. As they climbed for height they became separated in the clouds, but Sub-Lieutenant Brown intercepted two approaching Focke-Wulfs, and made four passes at one of them before it escaped into the clouds below. He then followed it down and finished it off in a sudden head-on attack—the German plane spun into the sea from ten thousand feet, tossing away its port wing just before it hit the water. The convoy reached Gibraltar without loss.

On the first night of the return passage, the homeward-bound convoy was again shadowed by two Focke-Wulfs, and a lurking U-boat sank a straggling tanker. Over the next five days the Martlet pilots sighted no less than seventeen enemy submarines and directed destroyers to attack them, and as a result, three were definitely destroyed, one of them being rammed by H.M.S. *Stork*.

One morning when the whole Martlet force was in the air, it intercepted three Focke-Wulfs. Sub-Lieutenant Brown destroyed one, the other two were damaged and driven off. In the afternoon Lieutenant J. W. Sleigh and Sub-Lieutenant H. E. Williams accounted for another. During this combat Lieutenant Sleigh collided with a Focke-Wulf and returned with a piece of its wing dangling from his Martlet's tail.

That day the Grumman planes put in a total of thirty hours flying time. The last two coming in had to land in the dark with *Audacity* rolling at fourteen degrees. Neither pilot had made a night landing before, and it would have been better if they had gone to a shore base, for one hour later a torpedo from U-751 under command of Lieutenant Commander Bigalk, struck the light carrier on the port beam below the mess decks. She went under at the stern until the aft gun platform was awash, but Commander D. M. Mackendrick refused to abandon her, hoping to get her in tow.

Twenty minutes later a second torpedo hit her on the port bow and within five minutes three more drilled in. The bow structure collapsed and *Audacity* reared her stern almost vertically into the air, the aircraft aboard broke adrift and wrecked the lifeboats and dinghies that had not already been destroyed. The U-boat was now plainly visible about two hundred yards away on the port beam and, as the carrier began to settle, her gunners engaged the enemy with their Oerlikon weapons. It was a resolute stand but it did not save *Audacity*. British corvettes picked up the survivors, but the losses were heavy

and included Commander Mackendrick and two of the Martlet pilots.

Although *Audacity* went down, she had run up a memorable score; her planes had destroyed five Focke-Wulfs and damaged three more, and she had contributed to the sinking of three submarines and the scuttling of a fourth. But perhaps more important she had proved that fighter aircraft could operate effectively from the decks of these small carriers.

The importance of Malta was clearly defined in 1941. A hundred great battles were fought in its defense. Disaster had overtaken Greece and Yugoslavia. Crete had proved more of a liability than an asset, and what remained of the British Army, Navy, and Air Force had had to retire to North Africa. The control of the Mediterranean had assumed vital importance. There were two ways in which heavy matériel, tanks, guns, and ammunition could reach Egypt, the chief base for all proposed North African operations. The battle-churned Mediterranean was one, and the route via Cape of Good Hope and the Red Sea the other. This latter route was threatened to some extent by German and Italian submarine fleets, but in the Mediterranean the U-boat danger was supplemented by a more powerful menace—Göring's Luftwaffe. By 1941 the Italian surface fleet was no menace at all, simply a caricature of a naval force, but under the protection of first-class German aircraft, Italian merchant ships were able to take supplies to the combined German and Italian forces that were operating in North Africa. On the strength of this, Malta stood like a jewel in the mechanism of the over-all British defense.

In this connection an interesting story concerning a contribution made by the U. S. Navy comes to light.

By the spring of 1942, a few months after America had been catapulted into the war by the attack on Pearl Harbor, the situation in the Mediterranean had reached a critical height. Hitler and Mussolini appeared determined to take and hold the island, or at least continue their air attacks to prevent Britain from rebuilding Malta's offensive and defensive capacity. Convoy after convoy of supplies was harried, attacked, and the bulk of the merchantmen sent to the bottom. On one occasion, of the 26,000 tons of supplies carried in four ships, only 5000 tons were actually landed, and the island fortress received no more for nearly three months.

But the Royal Air Force stationed there hung on somehow with only a handful of serviceable fighters. Pilots and ground crews were

strained to the limit of their endurance, merely to stay alive. While the air crews went aloft in sortie after sortie, and the mechanics, on the brink of exhaustion, worked to service and refuel for the next attack, the soldiers toiled like men possessed to repair the bomb-torn airstrips.

At this point Prime Minister Winston Churchill appealed to President Franklin D. Roosevelt, pointing out that the enemy had six hundred fighters and bombers in Sicily, whereas the best that Malta could muster to hold off this force was between twenty and thirty serviceable fighters. The island was being fitfully supplied with Spitfires in small groups of six planes at a time, all flown off the carrier deck of H.M.S. *Eagle* from a point six hundred miles west of Malta. *Eagle*, it will be remembered, was a 1918 product, a converted battle cruiser that displaced 22,600 tons and had a flight deck of 650 feet. She generally carried twenty-one aircraft for her own requirements, which no doubt accounted for the fact that she could take only six more, since the Spits were not folding-wing aircraft.

On April 1, 1942, the Prime Minister explained that *Eagle* was laid up for at least a month by defects in her steering gear. The old *Argus* was available but was too small, too slow, and unable to provide space for "passenger" aircraft and still put up fighter cover for the escorting force. *Victorious* was also available, but her elevators were not large enough to accommodate aircraft that could not fold their wings. Malta faced a whole month without any Spitfire reinforcements.

President Roosevelt was asked whether he would allow the U. S. Navy *Wasp* to do one of these trips. Ever in the know concerning naval matters, the Prime Minister pointed out that with her broad lifts, capacity, and length, *Wasp* could take fifty or more Spitfires, and unless it was necessary for her to refuel, *Wasp* could proceed through the Straits at night without calling at Gibraltar until she was on the return journey. The aircraft could be embarked in the Clyde.

As Churchill wrote later, the response was generous. *Wasp* was sent, and Malta lived to fight on.

In his incomparable *History of the United States Naval Operations in World War II*, Admiral Samuel Eliot Morison presents a heart-warming picture of this generous co-operation. He explains that *Wasp*, then under command of Captain John W. Reeves, Jr., was operating in the North Sea at the time, and after Admiral Royal E. Ingersoll, C-in-C Atlantic Fleet, and Admiral Ernest J. King, Chief of Naval Operations, approved the assignment, *Wasp* off-loaded many of her

own planes at Scapa Flow, steamed around Scotland through the Pentland Firth, called at Greenock, and moved right up the Clyde to Glasgow. Crowds of enthusiastic Scots cheered her all the way up the stream and the shipwrights at the John Brown & Co. yard tossed their tools into the air and bellowed their greeting. *Wasp* moved on to the King George V dock, took on forty-seven Spitfires—she was capable of carrying seventy-five aircraft at the time—together with their pilots and crewmen, made a turnabout in the artificial basin, and sailed on April 14, escorted by Force W of the British Home Fleet that was headed by the battle cruiser *Renown*.

The passage into the Mediterranean was uneventful. Force W held off any U-boats that may have been in the area, and maneuvered so as to be out of sight of Cape Spartel on the Moroccan coast at moonset of April 18. Europa Point off the southern tip of Spain was passed at 2 A.M. the next day in order to evade the searching eyes of Spanish or Axis spotters, and the force steamed for the chosen launching position some fifty miles north of Algiers.

After putting on twenty-eight knots into a fairish southwest wind *Wasp* began launching the Spits with speed and precision at 4 A.M. April 20. A new system of launching was used to get all the planes off as quickly as possible. First eleven of her own fighter planes flew off for combat air patrol, then the British-manned Spitfires followed. All fifty-eight planes were airborne by 5:01, indicating that they were practically sent off at the rate of one a minute. In order to accomplish this, the U. S. Wildcats were readied topside while the Spits warmed up on the hangar deck below, and after the Grumman F4Fs were waved off, each British plane was sent up on the elevator in eight seconds with its engine running, and on finding the take-off flag fluttering, took off the instant the elevator platform reached the level of the flight deck.

The full force of forty-seven Spitfires landed safely on Malta, but unfortunately their launching and arrival was known by the enemy who moved in and destroyed several of the British planes on the ground before they could be refueled and serviced. However, the others were prepared and put into the air in time to shoot down about forty Axis bombers that had made the attack.

By the end of April this Wasp-given force had lost twenty-three more Spitfires, and plans were made to send out more. On May 7 a great cheer went up from the embattled island when it was learned that



*Wasp* had made a second trip and delivered forty-seven more Spitfires.

This time *Wasp*, escorted by the destroyers U.S.S. *Lang* and *Sterett*, and H.M.S. *Echo* and *Intrepid*, dared the Straits for the third time on the night of May 7. Off Europa Point she was joined by the British carrier *Eagle*—once more available and carrying seventeen planes—and the rest of Force W. On the eighth this Malta relief force made a change of course to the northeast, moved toward Formentera Light in the Balearic Islands and launched aircraft early in the morning of the ninth. *Wasp* then waved off forty-seven fighters in fifty-three minutes. During this activity one Spitfire accidentally dropped its belly tank and had to return. The pilot landed in the darkness with rare skill, since he had no arrester gear hook, and requested permission to fit a new tank, take off and proceed independently.

Someone said, "You've had all the luck you can expect for one day, chum. The others are too far ahead; you'd just be a nuisance up there alone. Besides, we're doing twenty-one knots and heading back for The Rock."

*Wasp* received a typical Churchillian message when she got back to Gibraltar. Most grateful for the assist, the British Prime Minister radioed:

Congratulations! Your splendid effort disproves the old apiarian theory that wasps never sting twice. Good luck, and many thanks!

CHURCHILL.

The gallant American carrier returned to Scapa Flow and picked up the rest of her own planes and on May 18 sailed for Hampton Roads, Virginia. From there she was ordered to the Pacific where she soon met her end. It was unfortunate, but she had played a fine role with her British comrades. Almost all the Spitfires from *Wasp* and *Eagle* arrived safely on Malta's war-battered airstrip. With these machines and a few more from another delivery made about a week later, the R.A.F. was able to hold its own, and later to wrest control of the air from the Luftwaffe. The Axis airmen made numerous and most desperate attempts to knock little Malta out of the war; their siege and blockade lasted through May, June, and July of 1942, several important convoys were forced to turn back, and a battle of supplies followed the battle for the air. By all logical consideration the island should have fallen, and it might have had it not been for the timely assistance afforded by U.S.S. *Wasp* and H.M.S. *Eagle* who by

their comradely co-operation not only staved off this defeat, but, more important, cemented the warm friendship of the two great services.

It would be a mistake to assume that the reinforcement of Malta with Spitfires would win the battle for the Mediterranean. Far from it. These varied heroics and combined operations simply assured the Allies that Malta would stand firm, would hold, and eventually provide the focal point for a counterattack, and deprive the Axis of the very strength they had attempted to deny us.

The lifeline of the Mediterranean was provided by the Allied convoys that carried vital supplies and refreshed troops to the various theaters of operations, first in North Africa, and when more successful efforts rewarded our arms, to Sicily and Italy, from where the first thrusts were made against the German-Italian fortress.

A description of Operation Pedestal, the code name given to one particular convoy that was to gather for passage during the summer of 1942, will give some idea of the effort required to keep the lifeline intact. This operation was an excellent example of such planning in that it involved three subsidiary operations, all complementing the main task. It required complete aircraft carrier co-operation before the convoy entered the Mediterranean, a reinforcement of the Malta air defense by the delivery of Spitfires carried aboard *Furious*, and the return from Malta of a small convoy of empty ships.

The main convoy was assembled and ordered to steam down the Clyde during the night of August 2. It consisted of fourteen merchant ships, including a commercial tanker. These vessels, with their immediate escort of destroyers, passed through the Strait of Gibraltar on the night of August 9, and by daylight next day were beyond sight of the Spanish coast. Nevertheless, in spite of all precautions taken, the convoy was spotted and enemy forces ahead were alerted.

Meanwhile the heavy ships that were to cover them had also gathered. On July 31 Rear Admiral Arthur L. St.G. Lyster had sailed from Scapa Flow, flying his flag aboard H.M.S. *Victorious*, a carrier of the *Illustrious* class. The older carrier *Argus* was also part of the company. At Gibraltar the force was joined by *Eagle* and *Indomitable*, but *Argus* was left at The Rock, once the convoy and its covering force moved into the danger area. By now the carrier force had been joined by two battleships, *Nelson* and *Rodney*, six cruisers, thirty-two

destroyers, and four corvettes, which gives some indication of the importance of this Malta supply line.

On this occasion much trust was to be placed in the fighter squadrons aboard the carriers. Embarked on board the three flight decks were seventy Sea Hurricanes, Fulmars, and Martlets. Aboard *Furious* were Spitfires destined for Malta and not considered part of the air defense of the fleet.

There was little enemy opposition during the first day's sailing, but antisubmarine patrols had to be flown continually. The trouble began on the second day out of Gibraltar when an Italian Savoia-Marchetti reconnaissance plane was spotted early in the morning. Fighters from *Indomitable* drove it off, but the observer had seen enough to put enemy opposition into action. Hour after hour more shadowing planes were spotted. Tension rose and while all eyes were in the air, a great explosion erupted below *Eagle*; a torpedo from submarine U-73, commanded by Lieutenant Commander Rosenbaum, had scored a direct hit. The carrier had taken a station toward the tail end of the convoy, and the German commander, although well placed to attack any of the merchantmen, allowed them all to pass, risking the chance that any sudden zigzag by the convoy might well rob him of his shot at the carrier. Correctly, he considered *Eagle* of greater importance than any of the merchantmen.

Within ten minutes, the carrier rolled over and sank, taking many of her aircraft with her; those that were in the air landed later on *Victorious* or *Indomitable*. Fortunately, practically the entire complement of the carrier was saved, a total of 67 officers and 862 men were taken off.

Later that afternoon *Victorious* was attacked by a submarine and one torpedo passed dangerously close to her bow, but intensive air patrols and other antisubmarine measures kept most of the U-boats safely submerged. Although six of them were sighted before daylight failed, none was able to approach close enough to make an attack.

That evening the convoy had moved close enough to Malta and the Spitfires were flown off *Furious*. Once that duty had been discharged, the old carrier was detached and sent back to Gibraltar. When the Spits were well on their way, the first of a series of large-scale high-level air attacks was made by thirty or more Junkers. A squadron of flight-deck Hurricanes from *Indomitable* and a squadron of Fulmars from *Victorious* were launched to meet this opposition. Some of the enemy bombers got through and were met by heavy

antiaircraft fire—at least two were shot down. So accurate was this gunnery defense, the Junkers were hard put to make accurate bombing runs, and no merchant ships were hit, although two near misses gave the *Victorious* an anxious time.

On August 12 the convoy was moving in very dangerous waters and the defense called for an all-out effort, not only from the pilots of the fighters involved, but also from the deck crews responsible for the various programs of maintenance. For example, it was estimated that the flight-deck crews aboard *Victorious* in the routine work of setting wheel chocks, folding wings—that in those days had to be done by manual effort—releasing arrester gear hooks, spotting aircraft and sending them down the elevators, actually ran more than twenty miles up and down the flight deck. In the repair spaces below the mechanics worked continually in the glare of electric lights and an atmosphere of gas, oil, and battery fumes. All this was done at the height of a Mediterranean summer since there was none of the comfort of present-day air conditioning. Without this toil and devotion that went on hour after hour without a break, the fighters could not have flown those unbelievable hours.

The enemy airfields in Sicily and Sardinia were in fighter range, and the attacking bombers had strong fighter cover that made the convoy defense much more difficult. Also, the very effective motor torpedo boats of the Italian Navy were in the area, and if they could get within torpedo shot caused immense damage. The air cover from the carriers was expected to hold off, or overcome all this, and, therefore, interception extended from sea level to extreme bomber altitude. It is to the credit of the carrier airmen that postwar computation disclosed that on August 12 more than forty enemy aircraft were destroyed with the loss of only eight Fleet Air Arm fighters—in only one instance did an enemy formation break through when a group of twenty dive bombers selected *Indomitable* for its target. No direct hits were scored but one near miss buckled her forward elevator and she could not carry out launching or recovery operations. Her planes that were in the air had to land on *Victorious*.

Throughout that day the enemy sent out flight after flight of high- and low-level bombers, Cant three-engined torpedo planes, and Regiane fighters. Hour after hour, the sky throbbed with the varied roar of aircraft engines as the Martlets, Fulmars, and Hurricanes tore into enemy formations, harried their attackers, and screamed into tight turns to take on other hostile aircraft.

But with all these heroic measures—the grim fighting and the evasive tactics—the convoy did not come through unscathed. *Eagle* had been sunk, and *Indomitable* was out of commission. Of the fourteen merchantmen that had passed through the Strait of Gibraltar, only five reached Malta with their cargoes. The price paid was high, on both sides, but the need was critical and the supplies that were carried by those five merchantmen were sufficient to keep Malta fighting for a few more days.

The history of Operation Pedestal is an illuminating example of what can happen when command of the air in any theater of operations is in dispute. In this case, no matter how gallantly the carrier-borne, and later shore-based aircraft from Malta fought to drive off the enemy, enough opposition got through to cause exorbitant losses, not only to the supplies carried, but to the valuable escort vessels as well.

Lieutenant Commander P. K. Kemp, R.N., points out in his stirring book, *Fleet Air Arm*, that without the carrier fighters, no ships could have gotten through, and he adds that the small percentage that did succeed is probably in close relation to the degree in which the fighters managed to win a temporary command of the air, a command that was never more than spasmodic.

Later in the conflict, as more and more power at sea was brought to bear on the Axis forces, and as shore fighter stations were provided along the north coast of Africa, a permanent command of the air above the Mediterranean routes was enjoyed. The Malta convoys could steam through unscathed.

But Operation Pedestal also proved that the aircraft carrier, operating under such conditions and in such limited areas, is a very questionable item of naval equipment. We must consider that today the U. S. Sixth Fleet, with its major carrier force, is still attempting to do just that—operate in an area that can be harassed by shore-based aircraft, and in an inland sea that has a very limited field of action.

Great Britain's carrier force encountered similar problems in conveying supplies to Russia. In this instance the Germans had military bases in northern Norway from where they could deploy aircraft, submarines, and surface ships. Again, it was a matter of winning command of the air before the convoys could pass through safely. In the northern waters the situation was intensified by the determined ef-

forts of the U-boats that were a far greater menace than the Italian submarines encountered in the Mediterranean.

Another point, sometimes overlooked, is the fact that although a fleet carrier was generally included in the escort force of heavy ships, an additional escort carrier accompanied the convoys in the latter months of the Russian supply run. The heavy escort force could not remain with the convoy once it had passed the Bear Island-Tromsø line, since such a force would be running an unjustifiable risk. Also, the heavy force had to operate a long way south of the convoy route so as to be within air-striking range of any German capital ships that dared to leave their Norwegian bases.

A typical Russian convoy, listed as P.Q.18, sailed from Loch Ewe, Scotland, on September 2, 1942, and arrived off Iceland five days later. The following day it was joined by its ocean escort for the run to Murmansk. This force included the escort carrier *Avenger*, another of the *Audacity* class, that carried twelve Sea Hurricanes and three Swordfish.

Cloudy weather afforded some cover during the first few hours when the convoy was well to the westward, and enemy aircraft were evaded for some time, but this cloud condition was a back-handed assist, for it prevented the fighter pilots aboard *Avenger* from getting in any take-off and interception practice. This turned out to be tragic in the final disaster. When the first enemy attack developed on September 12, the Sea Hurricanes mistakenly concentrated on the aerial shadowers and allowed some forty to fifty Heinkel 111s—torpedo bombers—to slip through. These very efficient aircraft each carried two torpedoes, and before they were spotted and driven off, eight merchant ships had been sent to the bottom. Only one Heinkel was destroyed.

The next day *Lady Luck* transferred her largess, for the commanding officer of *Avenger* devised a new plan. Only two Hurricanes were kept in the air for the routine patrol, and were recalled at short intervals to refuel, so that when the opposition turned up the Hurries in the air would still have enough fuel to engage and carry on the pattern of combat. The main force of fighters was kept aboard the carrier and sent off only when the big-scale attacks materialized; the two in the air were considered sufficient to deal with the shadowers and to harass any small attacking forces.

On this day, the thirteenth, two very heavy attacks were experienced, one composed of twenty-two and the second of twenty-five Heinkels. Added to this were two high-level bombing attacks, but in

each case the Hurries broke into the enemy formations as they appeared, scattered them, and discouraged any preplanned attack. Only one merchantman was sunk.

The next day more than seventy enemy bombers made a long-drawn-out attack on the convoy, but no surface vessel was sunk. The manner in which the Hurricane pilots fought will be realized by the fact that more than forty German aircraft were shot down over September 13-14. More went down to antiaircraft guns of the escort. Only four British fighters were downed, and the pilots of three of these were rescued.

Many naval authorities consider that it was this convoy that proved the turning point in the anxious North Russian operations. The convoy that preceded it, P.Q.17, had been cut to pieces with dreadful losses. The adoption of an escort carrier in the close screen, had, after that first unfortunate day of P.Q.18's trip, proved to be the resounding answer to the attacks by German torpedo planes. The fighters carried by *Avenger* had been sufficient to attain a reasonably decisive state of command of the air above the immediate convoy route.

The submarine wolf packs that had made the initial contact on September 10 and had shadowed the convoy from then on, could score only very minor successes. They sank three ships, but lost three of their own force. The three Swordfish aboard *Avenger* flew determined antisubmarine patrols and kept the U-boats deeply submerged during the daylight hours. On a few occasions the enemy submarines were attacked with depth charges, and in one instance a Swordfish led H.M.S. *Onslow*, an escorting destroyer, direct to a U-boat that proved to be U-88. It was sunk then and there.

An interesting assignment assumed by a number of British convoy carriers took place during April 1944, and although this is reaching into the future, it may be well to present the incident here to show the many phases of the North Russian operations.

The German battleship *Tirpitz* had been damaged by a number of British midget submarines and was lying in Kaafjord on the northern tip of Norway while repairs were made. At the same time, a convoy to Murmansk was being run and in the convoy screen was the famous battleship *Royal Sovereign* that was being lent to Russia to replace one of the damaged Italian battleships that fell to her share after the Italian Fleet surrendered.

Since it was believed that *Tirpitz* was again operational and likely to appear at any time as a threat to *Royal Sovereign*, it was decided to

keep the German battle cruiser fully occupied in repairing further damage.

Kaafjord was too far for British land-based bombers to consider, and it was apparent that only the Fleet Air Arm could hope to make such an attack. Since these aircraft carried comparatively small bombs, there was no thought of actually sinking her. If she could be immobilized for a time, that was as much as could be expected.

As the time for the convoy form-up drew near, six escort carriers, *Victorious*, *Searcher*, *Fencer*, *Pursuer*, *Furious*, and *Emperor*, under command of Admiral Sir Michael Denny, gathered for the strike. In all they carried forty-two Barracuda torpedo bombers and eighty fighters. They reached their fly-off position before dawn on April 3 and the planes were in the air before any light appeared. Once at altitude and near their target, it was obvious that *Tirpitz* had been well tucked away. Kaafjord was a difficult area to attack from the air. The anchorage lay in the protection of the steep sides of the fiord, a situation that made it impossible for a torpedo-carrying aircraft to fly in low enough for a proper attack. But by the same token, the surrounding mountains shielded the incoming planes and filtered out the sound of any approaching enemy. To some extent, there was hope for a complete surprise attack.

Darkness spread across the Norwegian ranges, but the sky was beginning to lighten. The prediction had been for calm weather and a promise of a fine, sunny day later on.

Inside Kaafjord the *Tirpitz* was preparing to run a steaming trial in nearby Altenfjord, and the gate in the antisubmarine net defenses had been opened to allow her to sail through. There was some understandable pleasure and excitement aboard for this was the first time *Tirpitz* was to move under her own power since she was damaged by the British midgets, and it probably seemed that the long, shameful period of immobility was over.

Everything was quiet across Kaafjord, the sun began to gleam through slits in the early morning sky, the water was flicked into tiny ripples by a delicate spring breeze, and the prospects of war action must have seemed a long way off that lovely April morning.

Suddenly, the tranquillity was shattered as an aircraft appeared over the top of the surrounding high hills and came down in a screaming dive—not just one, though—others followed in at top speed from all directions and all were converging on the convalescent battleship. The concerted roar of airplane engines was broken into streaks of ear-



splitting sound by the explosions of bombs, the crash of antiaircraft guns and the detonation of shells.

*Tirpitz* was not to carry out her steaming trial that day. Her guns were manned too late. All that happened to her occurred before anyone on board could realize what had taken place. One minute she was safe and secure at anchor, a few minutes later she was battered by a fleet of impudent Barracudas. Another minute they were gone, and the noise had died away. A second striking force of twenty-one aircraft came in to mop up, but found the fiord full of smoke and so had to drop its bombs blind. That attack was also over within a minute, and Kaafjord returned to its accustomed peacefulness.

Apart from the damage caused by several near misses, the proud *Tirpitz* had received fifteen direct hits. Although unable to pierce her armored lower deck, the 500- and 1000-pounders had destroyed the upper works and vulnerable areas, a big fire was started amidships, great bulkheads were shattered, steam pipes severed or fractured, and a large area of the upper deck ripped open. More than three hundred of the ship's complement had been killed and twice as many wounded.

*Tirpitz* was a doomed warrior from that day on, and the success of this raid encouraged the planning of others. On July 17 the Fleet Air Arm was in Norwegian waters once more with the carriers *Formidable*, *Indefatigable*, and *Furious*. These flat-tops launched forty-five Barracudas that were escorted by fifty fighters, but after her beating of April 3 it was found that *Tirpitz* was taking no more chances; a series of lookouts had been established, and a radar station erected on a nearby mountain and when the Barracudas turned up Kaafjord was full of artificial smoke that sheltered *Tirpitz*. The bombers aimed at the area from which antiaircraft fire was gushing, but admittedly made no hits. The battleship suffered only superficial damage from splinters and near misses.

The British were not to be denied and struck again one month later. The same three carriers were involved, but this time they brought along *Nabob* and *Trumpeter*, two escort carriers. In order to defeat the smoke screen, it was decided that the attack should be made continuously on the assumption that the smoke pots would be exhausted eventually, and the antiaircraft crews too weary to carry out their loading and firing sequences.

The series of strikes began on August 22, and, to the surprise of the Barracuda crews, they ran into an antiaircraft barrage when they were more than twelve miles from the fiord. It turned out that the

*Tirpitz* was firing her main batteries and that the gunnery was being controlled from an observation post set on top of a mountain. By the twenty-fourth, the attackers were making a wide sweep on the way in, and then nosing down for the attack from the south. This day they struck the famed battle cruiser again—this time with a 1000-pound bomb that bounced off the bridge, penetrated the upper deck and came to rest on the lower armored deck directly behind the main switchboard, but the bomb failed to explode and quick action by two petty officers who dismantled it, prevented an explosion that would have put *Tirpitz* out of commission for months.

Still, the carrier airmen begged to go again. On August 25 they went out once more, but were frustrated by the heavy smoke screen and after they returned, all the carriers were ordered out of the area. That morning *Nabob* had been hit by a torpedo, indicating that U-boats were in the area.

From this point on, escort carriers worked with the Russian convoys throughout the rest of the campaign, and losses continued to diminish. The initial success of *Avenger* in the close escort pattern had provided an important factor in convoy defense. German aircraft were held off, and Hitler's heavy ships were no longer a threat, particularly after *Scharnhorst* had been sunk by a British force off the Norwegian coast, and now that *Tirpitz* was immobilized, for after that 1000-pound bomb hit, Admiral Doenitz had issued an order that in future *Tirpitz* would be used merely as a floating battery for the defense of north Norway, since it was no longer possible to keep her in a seagoing condition. It is interesting to note that although the British stated that they had used only 500- and 1000-pound bombs, Admiral Doenitz claimed that *Tirpitz* had been struck by a six-ton bomb.

The U-boats were still a menace, but the combination of air cover and fast work by the destroyers, kept them well in hand, and in the final capitulation it was agreed that the Fleet Air Arm contribution to the escort proved to be the key to final success. The aircraft carrier combined the role of fighter and antisubmarine patrol. Their American-built Martlets furnished the fighter defense while Swordfish and Grumman Avengers, TBF-1s, combined with the surface escort were more than enough to keep the U-boats at bay.

As in the Mediterranean convoy problems, it was again demonstrated that command of the sea was not enough, that it had to be combined with command of the air above before the supplies could

be moved with security. In each case the over-all result showed that naval aviation as an adjunct to the flexibility and striking force of sea power, had a remarkable influence even on the less spectacular duties of the naval war.

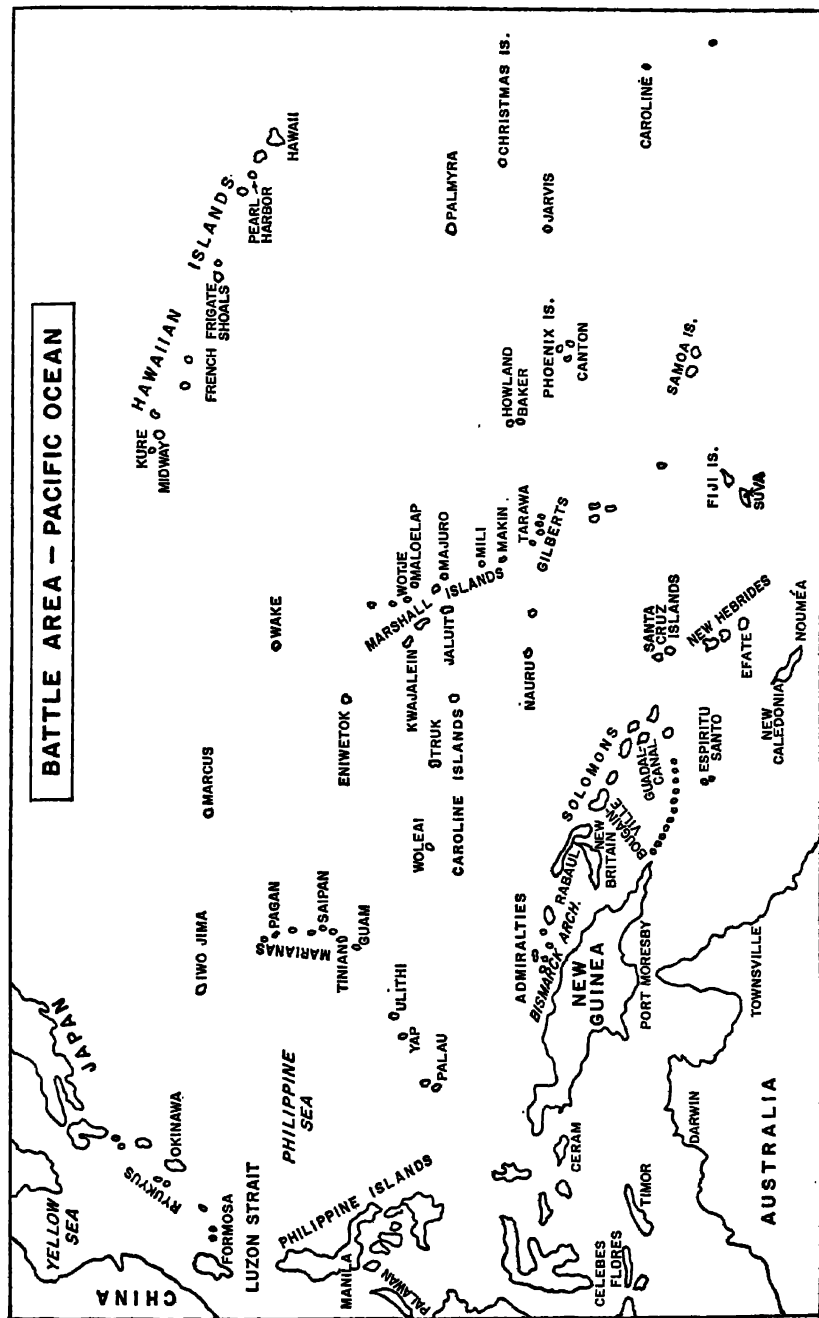
## CHAPTER IV

# THE GREATEST CARRIER ATTACK

THE JAPANESE attack on Pearl Harbor, December 7, 1941, was more than a military setback for the United States; it also afforded several dramatic surprises. That a small island nation, presumably holding the short end of a 5-5-3 naval ratio set up by the Washington Conference of 1921, could deliver such a devastating blow, left most of the world gasping. That this attack had been made by carrierborne aircraft was even more surprising. The public at large had not considered Japan to be a power with particular leanings toward carriers, or the science of carrier-deck operations. On the contrary, in the 1930s self-appointed military experts had pointed out that most Japanese capital ships were so badly built they were continually being remodeled, and her aircraft carriers were "shapeless contrivances" in that the smokestacks were trunked over the sides, and in no way resembled American carriers. This "junkyard fleet" might be effective against river gunboats, but no one in Japan would consider risking them against a first-class naval power.

But the growth of the Japanese Navy between 1936 and 1941 was phenomenal, once Japan had rejected the original Naval Limitation Treaty that ran out in 1937. The United States and Great Britain encouraged this unprecedented activity by selling for scrap every outdated vessel that could be sailed into Japanese shipyards. In 1922 Japan had 547,000 tons of naval bottoms, compared to 1,400,000 tons for Great Britain, and 1,100,000 tons sailing under the Stars and Stripes. Nineteen years later Japan had almost doubled her naval tonnage, Great Britain had added but 37,000 tons, and the United States had built up an extra 218,000 tons. By 1941 the Japanese Navy was more powerful than the combined Allied Fleets in the Pacific. In ad-

# BATTLE AREA - PACIFIC OCEAN





dition, tremendous sums of money had been spent on its peacetime upkeep, so that when sufficient excuse had been compiled, it was in a high state of war readiness.

There was no particular naval tradition in Japan's background. In her victorious war with Russia thirty-six years before, most of her vessels had been designed and built in Great Britain, but Japan learned a lot from World War I and soon began developing her own naval shipyards, and encouraging the growth of private construction. These government and private yards turned out many excellent examples of the trade, but made no attempt to mass-produce or provide backlogs of strategic materials to replace eventual wartime losses. Their earlier battleships generally were faster than their opposite numbers in the United States Pacific Fleet, and *Yamato* and *Musashi*, laid down in 1937 and completed early in 1942, were the largest and most heavily armored battleships in the world. Each had a displacement of 63,700 tons, or a full load of about 75,000 tons, an over-all length of 855 feet and an 18.1-inch main battery.

World War I had given Japan a full taste of military might and although she played no vital role in the conflict, she was able to put men of all ranks into important technical areas where they learned and copied all that Britain and the United States had spent millions to perfect. Looking back, we now remember that many Japanese airmen were trained by the Americans and British—for what, no one at the time troubled to ask. The Royal Navy's early experiments with carrier-deck operations intrigued Japanese naval authorities and, once the Armistice brought a halt to hostilities, they returned home and quietly continued this interest in ship-based air power.

The treaty obligations prohibited Japan from building new carriers, but early in the 1920s *Kaga* and *Akagi*, originally laid down as battle cruisers, were converted into aircraft carriers. They passed through several experimental stages that gave Japanese naval constructors plenty of experience and their airmen a deck or two from which to develop naval air operations. By 1936 Japan was busy building new carriers from the keel up, and at the outbreak of war she had ten, as against eight in the United States Navy, only three of which were in the Pacific.

Whatever the design or efficiency of the Japanese flat-tops, their carrierborne fighters—the Zekes were the naval counterpart of the Zeros—proved a distinct surprise, and their Kate torpedo bombers more than paid their keep.

However, in the development of torpedoes, the Japanese perhaps provided their greatest surprise. Great Britain, Germany, and the United States had had most disappointing experiences with torpedoes, particularly in the design of various types of detonators, but as a result of intense research between 1928-33 the Japanese first produced an oxygen-enriched fuel, and eventually a completely oxygen-fueled weapon. Their Type 95M2 24-inch torpedo had a speed of nearly 50 knots and a range of 5760 yards. It carried a 1210-pound explosive charge. U. S. experts claimed later, after long study, that the Japanese Type 93M1 torpedo could move at 49 knots and had a range of 22,000 yards. The best destroyer and submarine torpedoes that the U. S. Navy had at the same period were 21-inch weapons capable of 46 knots over 4500 yards. Japanese torpedoes could also be released at altitudes up to 1000 feet from planes speeding at 250 knots or better and not break on impact. It has also been pointed out that the Japanese Navy was most prodigal in firing practice torpedoes and could improve them constantly, whereas the United States Navy had to enforce strict economy when testing warheads and detonators, with the result that the main faults of our torpedoes were not uncovered until the Pacific war had been under way for many months.

Physical standards in the Japanese Navy were unusually high, the training was thorough and realistic. From all accounts, their chief naval school at Eta Jima on Hiroshima Bay was quite equal to Annapolis, and the Japanese Navy, being smaller than their Army, was able to keep the social standards of its officer corps relatively high.

Once the planned expansion was under way after 1930, it was necessary to enforce national conscription to gather in the necessary manpower, but comparative tables of 1932 show that Japan had on board six battleships and four battle cruisers, only one thousand fewer men than the United States Navy had aboard fifteen battleships. For instance, her heavy cruisers carried an average of 692 men each, as against 517 for the same type in the U. S. Navy. Each Navy had 72 destroyers in full commission, but the Japanese destroyers carried 9547 men, compared with 7773 on U. S. destroyers.

Practically all Japanese Navy training was performed in remote waters where it would not be observed, and in inclement areas where the men would be hardened by exposure to the elements—not in semi-tropical seas where fine weather prevailed. Japanese fleet organization was changed frequently and every possibility tested out, but certain general principles were adhered to. Everything, except the limited



naval forces in China waters, was included in the Combined Fleet. This was divided into a Battle Force and a Scouting Force stationed in home waters, a Blockade and Transport Force always alert for overseas operations, a Submarine Force, a Carrier Fleet, and two more smaller fleets assigned to specific areas. Defense of the Mandates was charged to the Fourth Fleet, based at Truk, and by mid-1939 a Northern, or Fifth, Fleet was organized to provide defense for the Kuriles. The Combined Fleet also acted as the first line of defense or offense behind which the smaller fleets could operate with some security.

As of December 7, 1941, the Japanese carrier fleet was composed of five carrier divisions and had six fleet, or heavy, carriers, *Kaga*, *Akagi*, *Soryu*, *Hiryu*, *Zuikaku*, and *Shokaku* available. The light, or escort, carriers were *Ryujo*, *Hosho*, *Zuiho*, and *Taiyo*. Three destroyer divisions of sixteen new vessels furnished the carrier screen. In other words, the Japanese Navy had everything and was a worthy antagonist, but it was badly handled by its higher command, and had no firm industrial base from which to draw its reserve requirements.

Since 1922 the bulk of the United States Navy had been in Pacific waters on the presumption that the next war would be with Japan, and with the knowledge that Nippon was the only maritime power ever likely to challenge the United States. Any reference to the bulk of the U. S. Navy of this period should be qualified, for by April 1, 1931, there was not too much Navy to crow about. President Herbert Hoover's administration had brought an economy wave and a ruthless scrapping of matériel and ships.

There were 15 battleships, but only three aircraft carriers, *Langley*, *Saratoga*, and *Lexington*. We had 18 cruisers, 78 destroyers, 55 submarines, and 115 auxiliary vessels of various categories. Most training was carried out in the Caribbean or off San Diego, and what foreign service was experienced usually meant "seeing the world," or providing good career background for officers, foreign travel, and exotic adventures for naval families ashore—as Admiral Samuel Eliot Morison has succinctly put it.

By 1932 a revision of thinking took place and, during his first administration, President Franklin D. Roosevelt proposed that the Navy be built up to treaty strength and by 1935 it was, but no arrangements were made to increase personnel. As a result all ships were being operated at about 81 per cent of their required strength. Appropriations were made on May 17, 1938, for several new battleships and

carriers, but by 1939 only the carriers *Yorktown* and *Enterprise* had joined the fleet. *Wasp* was under construction and *Hornet's* keel was actually laid. The battleships *Washington* and *North Carolina* were well under way and four other battleships had been started. However, treaty strength, as authorized in 1934, would not be attained until 1944. Navy personnel, up to 100,000 in early 1937, was increased by only 10,000 over the next two years. More important at the time was the lack of naval bases in strategic areas, but this lack proved to be a godsend since the United States Navy had to learn to become self-sufficient. Today, with high-speed tanker and supply systems, it no longer relies on fixed bases abroad to remain active, but at the time the failure to develop what bases we had meant a rapid withdrawal of American sea power from the western Pacific when Pearl Harbor blew up. In particular, the failure to develop Guam properly turned out to be bitter and tragic; had the inherent strategic capabilities of this largest of the Marianas been strengthened, the whole pattern of the war might have been changed. It had long been known that the Philippines were indefensible against a long-sustained enemy attack, but the United States forces hoped to hold Manila Bay and its approaches while the Fleet fought its way there by, or through, the Japanese-mandated islands, an operation that would take several months. It was obvious that a strong air and submarine base in Guam that would neutralize Saipan would be of tremendous assistance in this defensive phase of the war. Holding Guam might have prevented the Japanese southward thrust through the Philippine Sea.

Centuries from now historians poring through the preliminaries to the attack on Pearl Harbor will probably disbelieve every word they read. One or two may presume that they have come across something by Gilbert and Sullivan; few will associate the ridiculous capers of both sides as the preliminaries to one of the greatest naval attacks in history.

For instance, Lieutenant Commander Suguru Suzuki, possibly the youngest officer of that rank in the Japanese Navy, took a holiday trip to Honolulu toward the end of October 1941 on board the Japanese liner *Taiyo Maru*. But *Taiyo Maru*, although she was loaded with passengers, did not take the normal route to Hawaii, instead she sailed north, steamed between Midway and the Aleutians and then cut south to Hawaii. *Taiyo Maru* had taken exactly the same course the Japanese Fleet was to follow in its crafty approach to Pearl Harbor some weeks

hence, but none of the passengers aboard questioned this strange way of approaching the holiday islands of the Pacific.

Lieutenant Commander Suguru Suzuki did not join the festive parties aboard; he huddled against the subarctic drafts off the Kuriles and made reports in notebooks. He checked winds, barometric pressures, the roll of the liner under various conditions, and noted that in taking this inhospitable route *Taiyo Maru* did not sight a single vessel.

Once in Honolulu Commander Suzuki ignored the pretty girls, the beach parties, and the glamour of night life. He made more notes and one day went out to the John Rogers Airport with pad and camera and hired a plane to fly him over the many installations at Pearl Harbor. His money was good, he was very polite, and no one questioned his intentions. After this very interesting afternoon Commander Suzuki invited himself over to Hickam Field where he resumed an almost-forgotten art course and made some professional sketches of the hangars, runways, and other features of the base. No one questioned his being there; in fact, it has been said, he was invited to do a rendering of the new arrangements set up in the fuel dump areas.

It might seem that in a military operation that was to startle the world, these activities of young Lieutenant Commander Suzuki could not be too important, but on his return to Japan, November 19, he was whisked aboard the admiral's barge and taken to the battleship *Hiei*, anchored off Yokohama. He opened his many notebooks, read off his report, showed his photographs and sketches. On the strength of all this, the ships of the Japanese Fleet slipped out into the night, one by one. Admiral Jinichi Kusaka was satisfied that all would go well.

But there was another bit of history that encouraged the admiral to proceed with this hazardous adventure. The night before, he had received a letter from his housekeeper, explaining that in a dream she had seen a Japanese submarine fleet score a surprise victory at Pearl Harbor. How this old lady knew that any such venture was being considered, has never been defined.

While the thirty-two-ship fleet was heading for the balmy waters off Honolulu, the personnel was completely outfitted with arctic clothing—whether this was part of the “cover” scheme, or because the assault fleet was to rendezvous off the bleak Kuriles, is not known. They later switched to tropical kit.

The Japanese attack was so well shielded and staged that Americans still consider it a “sneak attack,” although the possibility had been con-

sidered for more than ten years. At sunrise on the morning of December 7 when the sky above Oahu was sizzling with enemy planes, a luxury liner, fluttering with holiday flags, its passengers anxious for the vacation beaches of Waikiki, steamed into the action area believing the U. S. Navy was staging a full-scale aerial spectacular for its benefit. Roy Vitousek, a young Honolulu lawyer and amateur aviator, was aloft for an early morning flight. The Japs took a gun-test shot at Mr. Vitousek and punctured some of his wing fabric. He was so incensed over this unfriendly act, he decided to go home and lodge a formal complaint. Another amateur airman, Robert Tyce, was standing on a small field near Honolulu and about to spin the prop on his aircraft when a Jap fighter pilot machine-gunned him. Non-flying people on the island turned over in bed and wished the Army or Navy would not select Sunday morning to play their silly war games.

At 7:02 a U. S. Army private—twenty-year-old Joseph L. Lockard of Williamsport, Pennsylvania—almost became a hero. He was on duty before a new aircraft detecting instrument—radar—when he thought he had identified a large formation of aircraft somewhere to the north. His superior officer decided that the young operator was mistaken and needed more instruction with the instrument, and no action was taken. Fifty minutes later the first wave of Japanese raiders made their land-fall over Diamond Head, and America was rudely projected into World War II. The little yellow man of the Rising Sun, who had so often been written off as a military airman, did a thoroughly proficient job. When he left, Pearl Harbor was a shambles. Single-engined bombers wiped out Wheeler Field, Hickam Field, Schofield Barracks, Belows Field, Kaneohe Naval Air Station, and much of the U. S. Pacific Fleet had gone to the bottom.

*Arizona, California, and West Virginia* were sunk, *Oklahoma* capsized after the attack, and *Nevada* was seriously damaged. *Maryland, Pennsylvania, and Tennessee* were badly damaged. The light cruisers *Helena* and *Raleigh* were heavily damaged and *Honolulu* received some damage. The destroyers *Cassin* and *Downes* were badly burned, and *Shaw* heavily damaged. The repair ship *Vestal* was damaged, the minelayer *Oglaga* was sunk, the seaplane tender *Curtiss* damaged, and the auxiliary ship *Utah*, sometimes used as a target tender, was sunk.

The Hawaiian Operation was under the command of Vice-Admiral Tadaichi Nagumo who finally had thirty-two vessels under his flag. They steamed out of Takan Bay in the island of Etorofu, Kuriles, and

the last to weigh anchor was the great carrier *Shokaku*—she was almost late because of turbine trouble.

On the way out they ran into heavy weather, pounding seas, steady gales, and at times the worst of fogs. The formation was maintained fairly well during the day, but at night the tankers lost touch and had to be herded back the next morning by the flanking destroyers. On November 28 they tried refueling at sea, but the waves were so rough it was impossible; the ships rolled, plunged, and bucked, and the great black snakes whiplashed across the decks and cut down men or swept small groups overboard. The discharged oil spread over the gangways, decks, ladders, and companionways, and made footing most uncertain.

This nightmare continued for days and nights while reports from Japanese agents in Honolulu made matters worse. At first it was understood that one aircraft carrier, the *Enterprise*, was anchored in Pearl Harbor along with a beautiful display of battleships, Class-A cruisers and destroyers. Later, it was reported that *Enterprise* and all heavy cruisers had left the harbor.

As a result, there were several hours of indecision, or perhaps concern. Why had the carrier and cruisers left? There was some talk of calling off the raid, but Admiral Nagumo had face to save and felt there was no turning back. Nevertheless, all who were in the know concerning the details of the operation spent a restless evening on December 6 when this intelligence was received. The men on the night watch continued their weary vigil and lightened their task by listening to Hawaiian music being broadcast from station KGMB less than four hundred miles away.

The fly-off point, about two hundred miles due north of Oahu, was reached about 6 A.M. that Sunday morning, for despite the long cruise and continued bad weather, a neat job of navigation had been accomplished. The heavy cruisers had pushed on ahead and had catapulted four float-fitted Zeros to reconnoiter the attack area. When they reported back that the U. S. Fleet was indeed nestling there with all the prize battleships at anchor, Admiral Nagumo knew his hour had arrived. His carriers began launching their Kates, Nakajima-92s, that carried aerial torpedoes or high-level bombs. The Judy, Aichi-99s, equipped as dive-bombers, were followed by the Zeke, Zero-3 Navy fighters.

To simplify the naval aviation nomenclature that will be used in this book, it might be well to give a list of Japanese aircraft and the topical nicknames that were applied by the U. S. Naval forces.

Betty—Mitsubishi Zero-1, two-seater high-level or torpedo bomber.

Frances—Nakajima P1Y, two-seater land-based all-purpose bomber.

Hamp—Mitsubishi Zero, two-seater Navy fighter.

Irving—Nakajima J1N, two-seater night fighter.

Jake—Navy, single-seater float plane.

Jill—Nakajima B6N, single-seater torpedo bomber.

Judy—Aichi D4Y, single-seater dive bomber.

Kate—Nakajima-97, single-seater torpedo bomber.

Val—Aichi-99, single-seater dive bomber.

Zeke—Mitsubishi Zero-3, single-seater Navy fighter.

Lieutenant Akira Sakamoto led twenty-five Val dive bombers to Wheeler Field to immobilize the American fighter force there. Twenty-six more Vals, under Lieutenant Commander Kakuichi Takahashi, swarmed over Hickam Field, that he understood to be the main heavy-bomber base of the U. S. Army Air Force, but a portion of this force was diverted to Ford Island that was reputed to be a haven for Navy fighters when they were not aboard ship. Whatever they expected, they did a workmanlike job on their targets—few American fighters got into the air. When the dive bombers that were assigned to the battleship force in the harbor went to work, they took their time, lined up their targets and put on an unhurried display. In this particular task forty-nine Kates that were armed with torpedoes, and forty others of the same category flying as dive bombers, were led by Lieutenant Commander Shigeharu Murata. As they raked the battleships, their accompanying Zekes intercepted and destroyed the few American fighters that had scrambled into the air. The highly maneuverable Zero-3s made mincemeat of the U. S. single-seaters, and it was obvious that the famed Brewster Buffalo had no right in the same sky with the Mitsubishi fighter.

Chief Flight Petty Officer Juzo Mori of the carrier *Soryu* flew one of the torpedo bombers against the U. S. Fleet in Pearl Harbor—any American battleship at anchor along the wharf of the Oahu Naval Arsenal was his particular assignment. He related: "We dropped down for our attack at high speed and went in at very low altitude. When I was almost in position to release my torpedo, I realized that the navy vessel at which I was aiming was not a battleship at all, but a cruiser. I was flying directly behind Lieutenant Nagai who continued his torpedo run on the cruiser, regardless of our original plan to attack only enemy battleships.

"However, I did not expect to survive this engagement, since we had

been given to understand we would encounter heavy resistance, and I felt that if this was to be my last flight I wanted it to be against an American battleship.

"To be frank, all the planes from *Soryu* did meet with an intense anti-aircraft fire, since the guns had been aroused by earlier attacks from planes off *Akagi* and *Kaga*. My aircraft shook and vibrated with the impact of machine-gun bullets, and despite my intention of switching from my path toward the cruiser to attack one of the battleships near Ford Island, I was forced to fly directly into this curtain of opposition. Because of this and the area topography, I steered directly over the battleships and then went into a banked left turn. I knew my approach had to be precise and determined since we had been warned that the harbor depth was not more than thirty-four feet. Thus, the slightest deviation in speed or height would send the free torpedo plunging into the sea bottom, or porpoising above the water, and all my risks would have been in vain.

"By this time I was flying like an automaton. My training was paying off and I was hardly conscious of any physical effort. I sat staring at the altimeter. Three thousand feet! . . . Twenty-five hundred feet! . . . Two thousand feet! . . . Suddenly the battleship stood out stark and clear directly in front of my nose. It towered there like a monstrous great structure.

" 'Prepare for release,' I muttered to myself. 'Stand by!'

" 'Release torpedo!'

"I had so concentrated on this torpedo attack, I was in no way conscious of the enemy anti-aircraft fire or the distracting roar of my engine. I had eyes or mind for nothing but the release of my torpedo. But apparently I had done everything correct and the instant I realized the great missile had gone, I pulled up hard, my plane lurched and faltered as more anti-aircraft fire pounded the wings and fuselage, my head snapped back with the shock and I felt I had been poleaxed.

"At the same time I somehow knew I would score. I sensed I would make a perfect hit. I had to put my torpedo into a battleship. The plane was still flying. Oh, that torpedo simply *had* to hit its target. I was positive I had released it at the correct instant.

"After launching the torpedo, I flew smack over the battleship and then swinging into a wide turn I crossed over the southern tip of Ford Island and then took a southerly course to conceal the position of our carrier. This we had been told to do before taking off. I raced away at top speed. I was so frightened my uniform was drenched with per-

spiration. The Americans were still firing heavy-caliber antiaircraft shells at me and I was thankful to get well away from the area and turn north for our carrier's position.

"For a minute or two I honestly believed I was free, in the clear and would be attacked no more. Then suddenly there was an enemy plane dead in front of me. I thought this would be my finish, for I had no fixed gun aboard this particular aircraft, only a puny 7.7 machine gun mounted aft that was limited to a rearward arc of fire. If I was to go down now, I was determined to take this enemy airman with me. I swung the Nakajima over hard with intent to ram, but the American pilot was so startled by my maneuver, he went into a steep dive and fled.

"I asked myself, 'Is this really war?'"

The level-bomber group was also specifically assigned to strike at the battleships. They were armed with one 800-kilogram armor-piercing bomb each. In this case the level bombers as they were known in the Japanese service, were guided to the target area by a special sighting or pathfinder bomber, and their level in this instance was 3000 meters or about 10,000 feet. As they closed in American antiaircraft fire opened up and the sky was clotted with grayish puffs. Land batteries joined the defense work of the guns aboard the doomed ships. From all accounts the accuracy was commendable, but the ammunition left much to be desired.

The main force of level bombers was escorted by Lieutenant Commander Shigeru Itaya from the carrier *Akagi*. Itaya took the first of the antiaircraft hate as he led the way in and his plane suddenly bounced as though struck by some invisible club. He looked around to see what had happened but then his radioman explained that the fuselage had been holed and one rudder cable was damaged. Itaya ordered his pilot to test it gently and on feeling a reasonable amount of control, was evidently satisfied to carry on. Accurate control in this case was necessary since they were expected to hold to a steady course as they approached the target.

Within a minute or so they were approaching the "release" point and Itaya concentrated on the formation's sighting plane to check the instant its first bomb was dropped. At that point a muffin of cloud floated between the lead bomber and the target. By the time this had cleared Itaya realized they had overshot and the lead plane was banking slightly and turning toward Honolulu. He had missed the release



point and realized the whole formation would have to circle and make another attempt.

While the level bombers orbited for another approach, a number of others made their runs, but some had to make as many as three approaches before the target was in the clear. Itaya's force was about to begin its second run when the crews caught a terrific explosion below along the U. S. battleship row. A tremendous column of blood-red smoke and flame rose about three thousand feet! Itaya believed it was a direct hit on a ship's magazine, but later they learned that this hit had been scored direct on *Arizona* and her boilers and forward magazine had exploded with the impact of several other direct hits by heavy bombs. As a result *Arizona* became a total loss and the shock waves of this series of hits were felt aboard every plane of Itaya's force which was several miles from the point of impact.

They began the run-in once more but this time were met by concentrated anti-aircraft fire. However, the lead bombardier had a clear field and the others made the most of his example. All bombs were released with resolute precision. Itaya, who was commanding the force, could move about and he at one time lay flat on the catwalk floor and slid open a peephole panel to observe the fall of their bombs. He was able to follow four missiles down as they screamed toward the harbor. The target was two battleships which were moored side by side off Ford Island. The bombs straightened out, became smaller and smaller and finally disappeared. The Japanese leader clenched his fists and held his breath until he saw two tiny puffs of smoke. He stiffened and screamed as he realized that two hits had been made.

His armor-piercing bombs did not provide too much to record—at first. These were fitted with delayed fuses and Itaya knew they might be well clear of the bombing area before they actually exploded. However, he was positive they had racked up two clean hits since there were no concentric waves which ripple out if the bomb falls in the water.

Actually, Commander Itaya's bombardiers did register two hits—smack on the battleship *Maryland*—but they must have been faulty, since they did not inflict the damage expected. She was quickly repaired and made ready for service about three months later.

At 8:45 A.M., Lieutenant Commander Shigekazu Shimazaki in charge of a second wave of 170 planes, ordered his force to attack. This wave had taken off the deck of *Zuikaku* at 7:15, about one hour

and fifteen minutes after the first. They were now over the target. Commander Itaya apparently stayed in the area to observe the manner of attack and the results.

Shimazaki's second wave was composed of 54 level bombers all armed with two 250-kilogram and six 60-kilogram bombs. Their targets were the American air bases. A dive-bomber group, led by Lieutenant Commander Takashige Egusa off *Soryu*, was made up of 80 Type-90 Vals, armed with 250-kilogram bombs. Its original assignment had been to attack American carriers, had there been any in the harbor. Now Egusa's force had been ordered to select targets from among the vessels which appeared unharmed or only slightly damaged. His was something of a mop-up detail. Fighter cover was supplied by 36 Zeros, under Lieutenant Sasburo Shindo off the carrier *Akagi*.

As soon as the attack order was given, the fighters turned their attention to the general strafing of Pearl Harbor and the airfields. The dive bombers slipped in over the east coast mountains and nosed down, following their leader whose plane was identified by a bright red tail assembly. As they went in, the billowing smoke from previous attacks swelled across the harbor and to some extent hampered their precision runs, but the Kates, fitted out as dive bombers, persisted in getting through and completed their mission.

The majority of Lieutenant Commander Shimazaki's level bombers that had followed the dive bombers in, concentrated on Hickam Field, but the remainder attacked Ford Island installations and the Kaneohe Air Base. These planes flew at about 6000 feet in order to work below the gathering clouds, but in spite of this hazard none of these aircraft was lost, although more than half of them returned showing the effect of antiaircraft shrapnel.

By 1:00 P.M. all surviving aircraft of both attack waves had returned to the carriers. Of a total of 353 planes, only 9 fighters, 15 dive bombers, and 5 torpedo planes, including their crews of 55 officers and men, failed to return.

As against these almost negligible losses, the greater part of the U. S. Pacific Fleet had been destroyed or immobilized for many months. What air strength had been based on Oahu was decisively smashed, and Japan most certainly had control of the air for many weeks.

But, according to some authorities, the Japanese were far from satisfied and in this first flush of victory they were for continuing the attack in the same area until there was nothing left to pulverize. In particular,

most of the air crews were disappointed that they had not encountered a single U. S. aircraft carrier, but even worse they had no idea where they were. Most of them guessed that two and perhaps four were somewhere south of Oahu with a cruiser force, carrying out some routine exercise.

The consensus was that another strike at Pearl Harbor might draw them in, and that, if instead of returning by the same route it had come, the Japanese task force were to skirt the south of the Hawaiian Islands and head toward the Marshalls, there might be a reasonable chance of tracking down the American carriers. But there was one obstacle to this plan. The Japanese tanker force was already heading for a prearranged rendezvous on the northern withdrawal route and there was no chance that they might catch up with the task force in time to furnish the required fuel. As a result, the last hope of engaging any American carriers had to be abandoned.

With the exception of a hurriedly organized force of the carriers *Soryu* and *Hiryu*, supported by the cruisers *Tone* and *Chikuma*, and two destroyers that were detached to support the invasion of Wake Island, the main task force swung off for the Inland Sea and their Hashirajima anchorage.

As Admiral Nagumo explained later, the initial attack on Pearl Harbor had been far more successful than had been expected, and any further attack could not have augmented the damage to any great extent. At the same time, in spite of the surprise attack, U. S. anti-aircraft fire had been more effective than anticipated, and to have sent out the planes again without a complete examination of all damage, would have increased aircraft losses out of all proportion to the extended damage.

Radio intercepts, on being interpreted, disclosed that about fifty large-type aircraft were still operational on the islands, and since they had no idea where the U. S. carriers—and submarines—were located, it was wiser to retire. To remain within attack range of land-based aircraft was a hazard Admiral Nagumo felt he should not risk.

Once the over-all threat of Pearl Harbor had dissipated, some arm-chair strategists in the United States found many faults in Admiral Nagumo's decisions. They wanted to know why Japan did not immediately seize Hawaii and use it as a base from which to carry their attack to the American mainland. They ignored the fact that the primary objective of Japan's initial war strategy was to secure oil resources. In itself, Pearl Harbor was of no strategic importance; the

destruction of the U. S. Pacific Fleet was their chief aim, and that they accomplished. Their military resources were most limited, and oil was the immediate goal.

Emperor Hirohito obviously had no ambitions to attack the continental United States; he had all he could do in aiming to take over the more important Pacific islands and oil-producing areas of Southeast Asia. What might have happened if Admiral Nagumo's task force had found and destroyed four, or even two, U. S. Navy carriers, is interesting to contemplate, but as it was, the fact that only *Lexington* and *Enterprise* were based there and were not in the harbor at the time, left one hollow of disappointment in the Japanese victory celebrations.

It is possible that our good fortune in having *Lexington* and *Enterprise* away from Pearl Harbor during this harrowing experience, saved America's future in the Pacific. As long as some sort of a carrier task force could be put to sea, Japan's position in the Pacific, despite her victory at Pearl Harbor, was precarious. And with this in mind, the more air-minded in the Japanese Navy labored on a new tactical doctrine for a sea engagement against this threatening carrier force, in which they intended to amalgamate all air groups aboard the six available carriers into one powerful attack group; a winged force that would strike this potential enemy en masse in overwhelming strength. The operations officer on Admiral Nagumo's staff, the famous Commander Minoru Genda, gave exhaustive thought and planning to this all-out effort to destroy all U. S. Navy carriers, the continuance of which eventually led to the invasion operations against Midway Island.

This scheme met with wholehearted approval, for it was the only logical way in which to exploit the success at Pearl Harbor. The Japanese staff was so enthusiastic about the idea that it was suggested that the whole task force put into Truk to support the Wake invasion. Instead, however, the main force returned to Japan where it was sensed that the Japanese leaders were overly elated by the destruction of so many U. S. battleships. It will be seen that although a few realized the potentiality of the carrier, the old guard still considered the battleship to be the Queen of the Seas, and any suggestion of a plan to trap the flat-tops was considered only in the light of a harebrained adventure.

From the American point of view, Pearl Harbor, the first great carrier attack, was a revelation. Its planning, precision of action, and the determination with which it was carried out, stunned the whole Allied world. Although there were ninety-four ships of the U. S. Navy in

Pearl Harbor at the time, the enemy raiders picked out exactly what they wanted. According to the official Navy statement issued by the Commander-in-Chief, Pacific Fleet, the attack was carried out in five phases.

- (1) 7:55-8:25 A.M. Torpedo and dive-bomber attacks on battleships as well as strafing attacks on air bases.
- (2) 8:25-8:40 A.M. A lull period.
- (3) 8:40-9:15 A.M. High-level bombing attacks on Pearl Harbor.
- (4) 9:15-9:45 A.M. Dive-bombing attacks on Pearl Harbor.
- (5) 9:45 A.M. All planes withdrew.

Within five minutes of the first torpedo attacks with special shoal-water torpedoes released between forty and one hundred feet above the water, the battlewagons were raked fore and aft by dive bombers. Because the big vessels did not mount antiaircraft guns that could fire over the bow or stern, these enemy aircraft got off scot-free. Their machine-gunning killed or wounded dozens of men who were trapped topside on the sinking ships. Within half an hour after the first torpedo was dropped, *Arizona* was a burning wreck, *Oklahoma* had capsized, *West Virginia* had sunk, *California* was going down, and every other battleship, except *Pennsylvania* which was in drydock, had been badly damaged.

*West Virginia*, which was eighteen years old, took seven torpedoes in her side, four of which pierced the armor belt amidships when she was listing heavily. To add to her travail, two bombs struck home, one starting a serious fire. Fortunately, smart damage control measures were taken, and the men who had been alerted as a Fire and Rescue Party to aid when an explosion was first noted on a Ford Island hangar, were uninjured. Proper counterflooding corrected a 28-degree list and allowed her to sink bodily until the turn of the port bilge hit bottom and prevented her from capsizing.

The *Tennessee* was moored inboard from *West Virginia* and was protected from the torpedo attack, but she received two big bombs early in the raid, the first of which landed on her center gun turret and killed Captain Mervyn S. Bennion of *West Virginia*. The second hit Number Three turret, pierced the five-inch armor and exploded inside, thus keeping down the detonation. These bombs were actually converted sixteen-inch armor-piercing shells that weighed between fifteen hundred and two thousand pounds.

*Arizona*, moored astern of *Tennessee*, suffered the worst beating

with the largest number of casualties, and became a total loss. She was moored inside *Vestal*, a small repair ship, and more than one hundred feet of *Arizona*'s bow protruded. As it was, *Vestal* took two direct bomb hits that created serious flooding, but she got under way and was beached on Ajea Shoal.

There was barely time to sound General Quarters and set up complete watertight conditions when *Arizona* was hit by several torpedoes and bombs, one torpedo missed *Vestal* and struck below *Arizona*'s Number One turret, then a heavy bomb landed beside her second turret, penetrated the forecastle and exploded in one of the magazines before that chamber could be flooded. The resulting explosion wrecked the whole forward part of the battleship and flames soared five hundred feet into the air. Rear Admiral Isaac C. Kidd and Captain Franklin van Valkenburgh were killed when a second bomb went straight down a smokestack and blew the engine room to bits. A third hit the boat deck and the tripod mast. So quickly did *Arizona* explode and go down, more than one thousand men were either burned to a crisp, or trapped below and drowned. Before the raid was over the famous battlewagon had lost almost fourth-fifths of her complement.

The gallant work and quick thinking of Lieutenant Commander Francis J. Thomas, who was senior officer aboard, saved *Nevada*. This battleship was moored astern of *Arizona*, but had no ship tied alongside her, and, although she had taken one severe torpedo hit, Commander Thomas decided to move her out of this target area. Chief Boatswain E. J. Hill jumped to the mooring quay, cast off all lines, while under heavy machine-gun fire, and swam back to *Nevada* just as she was moving away. In the meantime the five-inch battery, under command of Ensign Thomas H. Taylor, shot down one torpedo bomber, seriously damaged another, and accounted for a third that splashed into the water off *Nevada*'s port quarter.

In spite of the torpedo hole, some forty-five feet in length and thirty feet high that flooded several compartments, Commander Thomas maintained fine discipline and moved his command into a safer area, but while directing the anchoring detail Boatswain Hill was killed when he was blown overboard by a bomb.

A flight of Val dive bombers that was heading for *Pennsylvania* must have noticed *Nevada* under way and concentrated on this battlewagon instead. This time, things looked very serious for bombs were raising a crazy curtain of water all around her, but two tugs moved in to

assist and hauled her clear of the main channel to a hard bottom at Waipio Beach opposite the southern end of Ford Island. In addition to the torpedo, *Nevada* received five direct bomb hits before the action was over—three officers and forty-seven men were killed or missing, five officers and 104 men were wounded. Nevertheless, she was floated on February 12, 1942, and after temporary repairs she proceeded to Puget Sound. She finally rejoined the Fleet before December 1943.

*Oklahoma* never had a chance. She was moored outboard to *Maryland*, and before General Quarters could be sounded, or any counter-flooding measures taken, she was pierced by three torpedoes. Her skipper, Captain H. D. Bode, was ashore, and the Executive Officer, Commander Jesse L. Kenworthy, realized the situation was hopeless, and after a short consultation with Lieutenant Commander William H. Hobby, decided to abandon ship; the men were ordered to go over the starboard side as *Oklahoma* rolled to her doom. Two more torpedo hits went in above the armor belt, and the men were strafed by machine-gun fire as they crawled over the battered hull. High-level bombers drilled in more destruction, and *Oklahoma* did not stop rolling until her big tripod mast touched bottom. When she came to a halt she had tilted to 150 degrees with the starboard side of her bottom and a portion of her keel above water. She lost 20 officers and 395 men, killed or missing, of the 1272 complement aboard, and two officers and 30 men were wounded.

Aboard *Maryland*, which was protected from torpedoes by *Oklahoma*, Seaman L. V. Short had gotten up bright and early to address Christmas cards he planned to send home from Hawaii. The furor outside interrupted this holiday task, so Seaman Short went topside to man a machine gun, and knocked down one torpedo plane before it could get its "fish" away. *Maryland* was lucky; she took only one fragmentation bomb that ripped up the forecastle awning, and a sixteen-inch armor-piercing missile that entered the forecastle below the waterline and exploded in the hold. Only two officers and as many men were killed, and *Maryland* rejoined the Fleet the following February.

The flagship of Vice-Admiral William S. Pye, *California*, was at the southernmost berth in a particularly open area, and further burdened by being the flagship, for according to testimony later issued by the Bureau of Ships in its War Damage Report, *California*, while taut and smart in general appearance, was hardly up to standard in readiness and material condition. The "spit and polish" put on for the admiral

may have lessened the time usually given to more important material inspections. According to Samuel Eliot Morison in his superb history of this mortifying attack, six manhole covers to the double bottoms were off, and the securing nuts of twelve others were slacked away. Apparently, a routine inspection was to be made, but unfortunately, the Japanese airmen fouled up the program.

In other words, the admiral's flagship was not ready for war and "her watertight integrity was bad" with the result that her doom was sealed from the minute enemy opposition appeared over the horizon. Many of her top officers were ashore and those left in command apparently did not act quickly, for there was some delay in sounding General Quarters and setting up counterflooding measures.

At 8:05 A.M. two deep-running torpedoes hit *California* below the armor belt, one aft below Number Three turret, the other forward of the bridge. These were more than enough since the battleship, in the Navy phrase, was "unbuttoned" and unready for any such emergency. She began to list to port and although Ensign Edgar M. Fain made a brave attempt at counterflooding, a ruptured oil tank and incoming salt water deprived her of clean oil for the fuel system, and all light and power were cut off. By 8:10 *California's* antiaircraft batteries were firing, the ammunition being hauled up by hand, but at 8:25 a bomb exploded below and detonated a large supply of antiaircraft ammunition that spread fire, blast, and wreckage. More than fifty men were killed.

Meanwhile the damage control party restored power and water pressure so that the worst fires could be fought and by 9:10 *California* had four boilers available and was ready to move away. But before Captain J. W. Bunkley, who had made his way back to his ship, could give orders to unmoor, burning oil from the battleship to windward floated down and engulfed the stern. Orders had to be given to abandon ship, and the minesweepers *Vireo* and *Bobolink* moved in to give aid and to fight the fire, but *California* could not be saved because of her bulkhead condition. What pumping was done only "pumped Pearl Harbor through the ship." She did not touch bottom until late Wednesday night, or more than seventy-four hours after the initial attack. She was refloated March 24, 1942, and she then proceeded to the navy yard at Bremerton, Washington, under her own power, and rejoined the Fleet in time for the Marianas operation in February 1944.

To winnow through the rest of the damage, ship by ship, airfield



by airfield, would be only repetitious; it is sufficient to state that from the Japanese point of view, they had scored an enormous victory, and set up the triumphs they enjoyed at Wake, the Philippines, and through the Dutch East Indies. Indeed, they almost put foot on the continent of Australia. Coming at a time when the war in Europe was still in the balance, the attack on Pearl Harbor was not only a military triumph, but had formidable influence on morale throughout the British Empire. At first, very little was told of the vastness of the attack or of the huge loss suffered, but as the full import of the news gradually seeped out, it was obvious that the Axis powers had been joined by another apparently aggressive member. The British had suffered the evacuation of Dunkirk, a painful episode at Oran, a real threat of invasion, the torment of the bombing of Great Britain, and the first Battle of the Atlantic, a dreadful carnage that had lasted for seventeen months. There was still no promise that Britain would live.

Yet somehow, with this new and more terrible blow, came an unspoken belief that the battered Empire would come through. In spite of the crushing blow suffered by the U. S. Navy, Prime Minister Churchill said, "No American will think it wrong of me if I proclaim that to have the United States at our side was to me the greatest joy." Victory would come. Terrible forfeits would have to be made in the East, and the end was a long way off. Many disasters, immeasurable cost and grim trials lay ahead, but in Britain there was no doubt as to the outcome.

In the years that followed, calm consideration of the attack at Pearl Harbor afforded some irrefutable conclusions and some chauvinistic outbursts. Admittedly, the Japanese began their war with a resounding victory; with a single blow they knocked out a U. S. Navy battle force and mopped up the available air-striking potential. Whether this raid might have been better planned, depends on the reader's point of view. Should they have concentrated on more permanent installations at Hawaii, such as repair shops and dry docks? Should they have selected the power plant and the tremendous fuel oil reserves in giant tanks, that, according to Admiral Thomas C. Hart, would have set back our advance across the Pacific much longer than did the damage to the Fleet? This is a point to be argued for years, but it must be remembered that whatever the Japanese did intend, they did kill 2403 servicemen and civilians, and seriously wounded 1178. The United States Navy lost about three times as many men in this "surprise"

attack as the service had lost in two previous conflicts, the Spanish-American War and World War I.

Whether Pearl Harbor was a "treacherous and unwarranted attack" is a matter to be left to expert minds on naval warfare, but it is known that such an attack had been suggested and written about by military commentators for many years previous. That Pearl Harbor was an enticing target, no one will deny, and since undeclared wars were—and probably still will be—the norm, it is somewhat bewildering to encounter the continuing charges that this was a day of infamy, that Pearl Harbor was a sneak attack, and that it was in defiance of all rules of humane warfare. So-called humane warfare went out between 1914–18 when the Germans first used dum-dum bullets, saw-toothed bayonets, poison gas, flame-throwers, staged air raids against defenseless cities, and sank unarmed merchantmen.

The Japanese attack at Pearl Harbor was a well-timed operation, one made all the easier by the failure of U. S. military officials to take acceptable precautions or to heed the obvious warnings. It should be pointed out, also, that a carrierborne air attack is the most difficult of all such operations to detect, simply because even a large fleet of ships takes up a very small spot, particularly in the Pacific Ocean. The author has flown from San Francisco to New Zealand and Australia and back, and in some ninety hours of flying did not see one vessel of any kind. In the Jimmy Doolittle raid on Tokyo that followed the Hawaiian attack, not one of the planes that roared off the *Hornet* was noted or reported until in sight of the target. And so it was, over the rest of the Pacific campaign. A properly planned carrier strike would catch the enemy flat-footed, time after time. Why, then, has the Pearl Harbor strike been presented as a treacherous act by a treacherous foe? The Japanese could hardly have been considered friends of the United States. We had been at virtual warfare for several years, and it was obvious that Nippon would strike the minute the opportunity arose. She felt that we were overly committed through blood ties and Lease-Lend to the British in their conflict with Hitler and Mussolini, and it was now or never.

Whether the attack was a strategic necessity, as the Japanese have claimed, or whether it was strategic imbecility, as many American military experts have claimed, will long be contested; that the enemy should have concentrated on permanent installations and oil reserves, has more supporters, and hindsight informs us that from the political point of view the attack on Pearl Harbor was disastrous.

Few Allied military authorities believed that the Japanese were capable of more than one offensive operation at a time, but the smoke had not completely drifted away from Ford Island when they struck at the Philippines and Malaya at the same time. Once these points of military importance had fallen, they planned to move on Java, and in the meantime Vice-Admiral S. Inouye's Fourth Fleet would be expected to take Guam and Wake. The Philippines were required for political expediency and as a source of all-important copper. The size of the islands and the limited forces defending them, made amphibious operations relatively simple and tactical surprise easy.

Only one aircraft carrier was available, since most of them were engaged in the Pearl Harbor operation, but what air defenses were found in the Philippines were quickly accounted for by medium Navy bombers and long-range Zero fighters. In most cases, American aircraft were destroyed on the ground after they had maintained long, wearisome patrols awaiting the enemy's coming. What U. S. Navy cruisers were available to meet the onslaught, retired to the south without challenging the Japanese covering forces, and thus the invasion of the Philippines was added to the success at Pearl Harbor and other victories along the Malay Peninsula.

At 3:00 A.M. on the morning of December 8, Admiral Thomas C. Hart, Commander-in-Chief, Asiatic Fleet, responsible for naval operations in this area, was awakened at his Manila headquarters and advised by Lieutenant Colonel William T. Clement of the U. S. Marine Corps that his radio operator had intercepted a message that he knew was authentic since he recognized the technique of the sender. It read: AIR RAID ON PEARL HARBOR. THIS IS NO DRILL. This was the first news to reach Admiral Hart, and he immediately drafted an emergency dispatch to his Fleet: JAPAN STARTED HOSTILITIES. GOVERN YOURSELVES ACCORDINGLY. By 4:00 A.M. Lieutenant General Richard K. Sutherland, General Douglas MacArthur's Chief of Staff, was advised; General MacArthur also had not yet heard the news.

The Japanese carrier *Ryujo*, then lying east of Davao on the island of Mindanao, launched thirteen dive bombers at dawn. Escorted by nine Zeke fighters they attacked the U. S. seaplane tender *William B. Preston*, anchored in Davao Gulf. Two of her three planes were sunk at their moorings—a third was out on patrol—an American pilot was killed and one of the enemy dive bombers was forced down. The seaplane tender escaped without damage and steamed for a safer anchorage from where she could resume her flight operations.

Shortly after daybreak, fourteen heavy bombers of the Japanese Army Air Force took off in bad weather from Formosa, arrived over Baguio about 9:30 A.M. and bombed military installations. Eighteen twin-engined light bombers struck Tuguegarao airfield in the northern part of Luzon. At 10:14 Admiral Hart received official orders to execute the war plan against Japan.

Although Japanese aircraft had already struck at Baguio, no word of the action had reached Clark Field or the city of Manila. At 12:45 P.M., when all aircraft at Clark were down for refueling and the pilots at lunch, a force of Japanese fighters, with medium- and high-level bombers, turned up, and within a few minutes twelve Flying Fortresses and thirty P-40 Warhawks were destroyed, and five more B-17s damaged. The raiders lost but seven planes.

On December 10 the U. S. Army Air Force received a forty-five minute warning that a number of enemy planes were approaching from the north. Twenty P-40s and fifteen P-35s went up to intercept, but these ancient birds were soon knocked out of the play by fifty to sixty Zero fighters that were escorting eighty bombers. North of Manila these forces broke up and some of them worked over Nielson and Nichols Fields and Camp Murphy, while fifty-four planes flew back and forth over Cavite in leisurely artistic curves, dropping their bombs at will. Practically every missile fell inside the U. S. Navy Yard. Direct hits were scored on the power plant, torpedo repair shop, dispensary, supply offices, warehouses, commissary, barracks, officers' quarters, and on several vessels anchored along the waterfront. From this point on amphibious landings, and the eventual capture of Manila, were just a matter of course.

At Guam matters were much the same, and most effort was devoted to getting American women and children off the island. Enemy aircraft from the island of Saipan carried out most of the softening-up process and supported the amphibious landing. The Japanese then completed the airfield on Orote Peninsula, a project America had felt too poor to undertake. This airstrip had an important role in the Battle of the Philippine Sea.

Borneo, Hong Kong, and the Malay Peninsula landings were carried out with the same precision.

But a few faint rays of good fortune glinted through the smoke and debris of the Hawaiian operation. As mentioned, all shore facilities were still operative and most available submarines were undamaged,

but more important, Admiral Husband E. Kimmel's fast carrier forces escaped since they were out on routine missions. The carrier *Lexington*, under Captain Frederick C. Sherman, the heavy cruisers *Chicago*, *Astoria*, and *Portland*, and five destroyers were 420 miles southeast of Midway Island to which they were heading to deliver a U. S. Marine Corps scout bomber squadron. The planes were to be launched from *Lexington* about noon.

Instead, on learning of the air raid on Pearl Harbor, Rear Admiral J. H. Newton who was temporarily in command, ordered this task force back toward Oahu, and Admiral Kimmel directed it to rendezvous with Admiral William F. Halsey's force that was about one hundred twenty miles west of Kauai, the northern island of the Hawaiian group. Admiral Halsey had a carrier striking force built around the *Enterprise* which had left Pearl Harbor on November 28 to deliver Marine Fighter Squadron 221 to Wake Island, and was now on its way back to Honolulu. Besides the *Enterprise*, under command of Captain George E. Murray, Task Force 8, as it was known then, consisted of three heavy cruisers and nine destroyers.

Rear Admiral Raymond A. Spruance flew his flag aboard *Northampton* but was in charge of this carrier force and on the morning of December 7 launched a number of planes from *Enterprise* and had them flown to Ford Island—they arrived just in time to be wiped out by the Japanese attack. Admiral Halsey's force was then about two hundred miles west of Oahu, and although he regretted not being able to engage the enemy, he was lucky, for *Enterprise* most certainly would have been sunk.

A third carrier, *Saratoga*, commanded by Captain Archibald H. Douglas, was off the coast of California, and along with the battleship *Colorado*, then at Bremerton for overhaul, was ordered to report immediately to Pearl Harbor as a nucleus of a third fast carrier striking force.

Thus, if we concentrate on what was left of the U. S. Fleet, instead of what had been lost, the situation appears less serious than it seemed at the time. Naval strategists were so accustomed to evaluate naval power in terms of available battleships, they often ignored the striking power of the carrier force. What weakness might be listed, was in the lack of aircraft to carry out a search for the Japanese Fleet. At Hawaii we had only three PBY Catalinas, a dozen Marine SBDs and seven utility aircraft of various types. The Army Air Force could muster only four Flying Fortresses, eleven B-18s, and about seventy-five short-

range fighter and reconnaissance planes to search for and pursue the enemy fleet.

In order to reinforce our Pacific Fleet, Admiral Ernest J. King, Commander of the Atlantic Fleet, was ordered to deliver the carrier *Yorktown*, with a full complement of aircraft and air crews, the battleships *New Mexico*, *Idaho*, and *Mississippi*, and a destroyer squadron to the Pacific. Three squadrons of land-based bombers were also to be flown out.

Actual war was very new, and, as was to be expected, there was some confusion, misjudgment, and service foul-ups in the first frantic efforts to head off the enemy fleet. Alarms, excursions, and weird theories were general rather than isolated instances. The immediate decision was that Nagumo's force was steaming to the south since the attacking planes seemed to have flown away in that direction. Then someone remembered that two Japanese carriers had been seen at Kwajalein—most certainly these were the backbone of the enemy's striking force.

The U. S. Army Opana radar station on the northern tip of Oahu, which had been secured at 8:00 A.M. on December 7, began tracking again by 9:00 and from its evaluation of the blips on its screens, the attacking planes were heading north, but since no one was certain of this interpretation, Navy headquarters was not informed. Admiral Kimmel made a "logical guess," that there was some indication of a Japanese fleet northwest of Oahu, and he ordered the *Enterprise* task force to "intercept and attack."

Even the famous "Bull" Halsey was unequal to attacking an enemy whose composition and position were unknown, so nothing came of that.

A new furor started when two Japanese carriers were sighted off Barbers Point, only eight miles from the mouth of Pearl Harbor. The cruiser *Minneapolis* intercepted this report and since she was smack on the position, her commanding officer, Captain Frank J. Lowry, tried to reassure the Commander-in-Chief, Pacific Fleet, by sending a message: NO CARRIERS IN SIGHT. His radioman added to the confusion by sending: TWO CARRIERS IN SIGHT. A flight of patrol planes roared out, hoping for glory, but found only *Minneapolis*, and fortunately recognized her in time and did not attack.

A Japanese carrier risked a radio transmission and someone took a direction-finder bearing on the message. Such an instrument records reciprocal bearings simultaneously—that is to say, the direction-finder

operator must decide which is correct. In this case the enemy carrier was actually heading 358 degrees, but the interpreter decided that the opposite, or 178 degrees, was more logical, and accordingly the enemy was presumed to be due south. While this perplexity was being unraveled an airman from aboard *Enterprise* identified as an enemy flotilla a number of light cruisers and destroyers from Rear Admiral Milo F. Draemel's force that had steamed out of Pearl Harbor.

By now, Admiral Kimmel who had made one correct guess, was completely befuddled, and decided that in all probability the Japanese *had* attacked from the south and were retiring to Jaluit in the Marshalls. More intense searching was carried out in areas to the west and south of Oahu. Torpedo and dive bombers off *Enterprise* were said to have started an attack on Admiral Draemel's light force, but the mistake was recognized in time. Another air-striking force from *Lexington* searched the southern area hoping to intercept the enemy who was presumed to be heading for Jaluit.

There were no "successful intercept" reports for the Commander-in-Chief, only the word of the first air attacks on Wake and Guam, and the shelling of Midway by a flotilla of Japanese destroyers. Thus ended that dreadful December 7.

Again, I am indebted to Admiral Samuel Eliot Morison for pertinent incidents that so clearly illustrate the story of a service scrambling from its hands and knees to fight back. On December 8, Rear Admiral Wilson Brown aboard *Indianapolis* joined the *Lexington* task force, TF 12, and took over from Rear Admiral John H. Newton. He was advised that direction-finder bearings had indicated unidentified vessels in the vicinity of Johnston Island, almost due west of Hawaii. Float planes catapulted off cruisers could find nothing. The pilot of a patrol plane flown off Johnston Island, reported an "encounter" with an enemy carrier whose flight deck was "camouflaged to look like a heavy cruiser," and a destroyer "with the rising sun painted on her bows." Before too much damage was done, the camouflaged carrier was found to be U.S.S. *Portland*, and the destroyer was U.S.S. *Porter* whose bows had been chipped down in spots to the red lead base.

The unhappy Admiral Kimmel recalled the *Lexington* task force to Pearl Harbor about noon of this day, and en route Rear Admiral Brown was advised that Johnston Island was under attack, so he ordered his cruisers to move in at twenty-five knots, and was preparing to launch aircraft off *Lexington* when this report was corrected, and the course for Oahu was resumed that night.

Not until late that day, December 8, were the authorities at Pearl Harbor convinced that the Japanese attack had come from the north. True, *Minneapolis* had searched for twenty-four hours in northern waters, but she had been nowhere near the actual course of the enemy.

Dozens of depth charges were dropped on sportive porpoises, and anxious lookouts spotted periscopes in every lace-fringed wave, but just before dawn on December 10, Lieutenant Edward L. Anderson, flying a Douglas Dauntless SBD, spotted the 2000-ton, I-70, enemy submarine. He made an accurate dive-bombing attack that caused considerable damage—the boat was not able to submerge. Later that day Lieutenant Clarence E. Dickinson, in another Dauntless off *Enterprise*, found the submarine surfaced with many of the crew and much debris in the water nearby. He attacked with vigor and I-70 went to the bottom.

Later that day *Enterprise* had a narrow escape when a lookout spotted a torpedo track and the helmsman put the wheel over in time to avoid being hit. At that instant another lookout sighted a submarine just ahead as planes were being recovered. The destroyer screen roared in and attacked with depth charges, but whether the target suffered damage and had eventually to surface was not clear. However, a short time later *Salt Lake City* engaged a submarine with gunfire. The next day, December 11, this submarine-torpedo routine was repeated, but so far as was known no scores were recorded. On December 15 this task force entered Pearl Harbor to refuel.

Neither U. S. carrier could engage Admiral Nagumo's Hawaiian Operation force on its way back to Kure on the Inland Sea of Japan, and hard-headed realists agree that it was just as well; for Halsey's and Brown's combined force would have had small chance against the six carriers and the battleships of the enemy. Nagumo could have put at least 350 planes off his decks, against a total of 130 carried by *Lexington* and *Enterprise*. Both were saved to fight another day under more equal conditions.

Such a day was not long in coming.

■



## CHAPTER V

# STRIKES AND COUNTERSTRIKES

AMERICA'S course of action, following the Day of Infamy, had to be planned with consideration for many possibilities. Little was known of the enemy force that had delivered this staggering blow, but within hours Guam had fallen, Wake Island was under heavy attack, some of the Gilbert Islands had been occupied, and the possibility of an enemy landing on Oahu could not be discounted. There was little air power left, but it was hoped that by December 15 the Army would have 114 bombers and fighters available. Some forty to fifty Navy planes had been made operational, and the eighteen Marine scout bombers, originally intended for Midway, had been flown back to Hawaii; but it was realized that, to maintain any defense, replenishment and buildup of supplies of all kinds would demand much fleet convoy-escort work.

The U. S. Navy decided to employ three search-strike carrier groups, of which two would be always at sea, while the third refueled at Pearl. Battleships and destroyers were to be organized into escort groups for trans-Pacific convoys—the former were to be based in San Francisco for wharf convenience and would be relieved at a specified mid-ocean rendezvous by destroyer-escort forces working out of Pearl Harbor. U. S. submarines sailed for offensive patrols in Japanese waters and were ordered to keep a close watch around Wake and Midway. At the same time, it was also needful to continue an intense patrol-search with Army bombers and Navy patrol aircraft.

A Marine force that was hurried to Pago Pago, Samoa, an important but lightly garrisoned U. S. Naval station, was loaded aboard four transports and one fleet cargo vessel, accompanied by an ammunition ship and a fleet oiler. This reinforcement sailed from San Diego, Janu-

ary 6, 1942, and was convoyed from the U. S. coast by a new fast carrier force formed around *Yorktown*, and commanded by Rear Admiral Frank J. Fletcher. When they were a short distance off Samoa, the transports were taken over by Admiral Halsey's *Enterprise* force, and they steamed safely into Pago Pago by January 23. On that same day a Japanese amphibious thrust, covered by Admiral Nagumo's carrier-striking fleet, was made against Rabaul, New Britain, and was so successful that the meager Australian garrison there was quickly overwhelmed. From Rabaul, the Japanese extended their power along the coasts of New Britain and New Ireland and gained complete air and naval control of the Bismarck Archipelago. Rabaul effectively checked any Allied advance in that quarter for more than two years.

Once Samoa was properly garrisoned, however, it was hoped that carrier raids on Wake and the Marshalls would be next on the American agenda, but misfortune dogged these efforts at first, for Japanese submarines that had performed miserably at Pearl Harbor, were revitalized by that victory and gave considerable trouble for a time.

Vice-Admiral Wilson Brown's *Lexington* group was given the task of attacking Wake, but when it was 135 miles west of Pearl Harbor his fleet oiler *Neches* was torpedoed and sunk. Since this force could not proceed without refueling and no other tanker was available, Admiral Brown's Wake strike had to be cancelled.

When Rear Admiral Fletcher was given the *Yorktown* group, Task Force 14, of which *Saratoga* was the carrier, was commanded by Vice-Admiral Herbert F. Leary. On January 11, a torpedo fired by a Japanese submarine struck *Saratoga* when she was about five hundred miles southwest of Oahu. In all probability the torpedo was a deep-running weapon for it was not sighted by any lookout. Six crewmen were killed and three of the firerooms were flooded, but the carrier reached her wharf at Oahu under her own power, and after temporary patching went on to Bremerton, Washington, for permanent repairs and some modification. Her air group was distributed among the other carriers, or sent to training centers. Task Force 14 was then disbanded and Admiral Leary was given command of an Australian-New Zealand force under organization in Wellington, New Zealand.

This particular *Saratoga* was the fifth U. S. Navy ship of that name; the first was a post-Revolutionary War sloop of eighteen guns, the second a corvette built in 1814, another sloop, *Saratoga*, was built in 1842, and in 1891 a standard cruiser named *Saratoga* came down the ways but had many name changes until she passed out of service in

1938 as the U.S.S. *Rochester*. The carrier *Saratoga* was originally laid down as a battle cruiser, as was her sister ship *Lexington*, but appeared as a 40,000-ton carrier in 1925. After a long and honorable service in the Pacific war she was disposed of in the atomic bomb test at Bikini Atoll on July 14, 1946. She is not to be confused with today's U.S.S. *Saratoga* CVA-60, a heavy attack carrier.

A new assault was planned against the enemy-held Marshalls, and by January 25 Admiral Halsey's *Enterprise* group was ordered to deliver a carrier-plane strike against Wotje and Maloelap, two enemy seaplane bases. At the same time Admiral Fletcher was ordered to take his *Yorktown* group to harry Makin, Mille, and Jaluit.

A reconnaissance of the archipelago was made by the crew of the submarine *Dolphin*. On January 27 they reported that the entire group of islands was only lightly defended and that the greatest concentration of shipping and aircraft was to be found at Kwajalein Atoll. This news encouraged Admiral Halsey to take in Kwajalein also. The new plans broke Task Force 8 into three groups with varied assignments. *Enterprise*, screened by three destroyers, was to launch plane strikes against Maloelap, Wotje, and Kwajalein, the heavy cruisers *Northampton* and *Salt Lake City* were to bombard Wotje, while *Chester*, accompanied by two destroyers, was assigned to Maloelap. Task Force 17, still under Admiral Fletcher aboard *Yorktown*, escorted by the cruisers *Louisville* and *St. Louis* and screened by four destroyers, was to take care of the southern islands of the archipelago.

The U. S. Navy was in a position to strike back at last.

The full force sailed out of Samoa together and moved en masse until 6:30 P.M. on the evening of January 31 when it broke up for individual attacks. *Enterprise* put on thirty knots during the night and Admiral Halsey planned to launch his aircraft about 4:45 A.M. on February 1. Wotje was 36 miles away, Maloelap about 106, and Kwajalein, the most important objective, was some 155 miles over the horizon. Everything worked well, except at the last minute, the navigators discovered that they had no recent maps of the attack area; what were available were leftovers from the Wilkes Exploring Expedition of 1840, and were useless in air searches for enemy bases.

The first group of nine torpedo bombers and thirty-seven dive bombers took off at 6:58, and the latter headed for the Roi air base at the northern end of the atoll—the torpedo bombers were slated for the shipping believed to be off Kwajalein Island, about forty-four miles across the main lagoon. Because of the primitive charts, the attack

against the air base was not a great success, for it was not found until 7:05 A.M., and while the bombers were cruising about in search of the target, the enemy had time to fuel up, arm the guns, and get into the air to intercept. The antiaircraft batteries below almost had a turkey shoot.

Lieutenant Commander Hallsted L. Hopping, the squadron commander, had released one bomb when he was shot down by ground fire. Three more of his planes fluttered down under the guns of Zero fighters. At Kwajalein Island, ten SBDs, backing up the torpedo bombers, had better luck; the transport *Bordeaux Maru*, and a Japanese sub-chaser were sunk, another subchaser, a river gunboat, and the net tender *Kashimar Maru* were badly damaged, a minelayer, *Nagata Maru*, the 9240-ton transport *Tokiwa*, the light cruiser *Katori*, the *Kanto Maru* an ammunition ship of 8600 tons, and a submarine tender were damaged, eighteen Japanese planes were shot down or badly damaged, and some ninety men, including the area commander, Rear Admiral Yashiro, were killed.

Five Grumman Wildcats found the Taroa airfield at Maloelap, and after raking over the hangars, hung around long enough to entice a few Jap fighters into the air, and two Zeros were shot down in flames. The Grummans then returned to their deck safely. Other fighters concentrated on Wotje while cruisers and destroyers bombarded the shore. One report had it that *Northampton* and *Salt Lake City* had put full salvos into some enemy warships that were making a retreat from the lagoon, but nothing of importance was sunk, and only light damage was inflicted on shore installations. In the meantime the SBDs had returned from Roi, and at 9:35 were sent back. This time their luck was better as they found and wiped off some new hangars and other ground installations.

The U.S.S. *Chester*, flagship of a bombardment group assigned to Taroa Island, was not so fortunate. On their arrival, eight twin-engined Jap bombers ignored the bombardment, took off, and gave *Chester* a warm reception. The cruiser dodged and turned, but one light bomb penetrated her main deck, killed eight men and wounded eleven others.

Admiral Halsey gave the operation all he had. He maneuvered about in a very limited area for more than nine hours, and why *Enterprise* was not attacked by submarines or high-level bombers is a mystery. About 1:00 P.M. he decided to move out. It was none too soon, for at 1:40 a Japanese twin-engined bomber tried a kamikaze and almost

crashed on the flight deck of the *Enterprise*, but fortunately a young aviation mechanic, Bruno P. Gaida, sensed what was happening, jumped into the rear cockpit of a parked plane and opened fire with a flexible machine gun. At the same time an alert helmsman put on a "hard right" and the would-be suicide pilot was foiled; the aircraft touched only the port edge of the flight deck and rolled harmlessly overboard. At the height of this excitement two more Jap bombers tried to get at *Enterprise*, but they were shot down with a withering antiaircraft fire.

But what was going on at the southern Marshalls? Down there the *Yorktown*, with *St. Louis* and *Louisville*, was concentrating on Jaluit. Eleven torpedo bombers and seventeen dive bombers, under Commander Curtis S. Smiley, were launched, but the flying men got only good combat practice for the weather turned vile, thunderstorms shielded the target and only two unimportant vessels off Jabor Town were hit—but not sunk. Very little shore damage was inflicted, but six of *Yorktown*'s planes failed to return. Nine SBDs attacked Makin Island in the Gilberts shortly before sunrise, but the only target they found there was a minelayer that may have been hit, but refused to go to the bottom. A strike against Mille was no more fruitful. While these air strikes were being made, a four-engined bomber attacked the destroyer screen with no results, so it turned toward the *Yorktown*, not realizing perhaps, that Admiral Fletcher had a combat air patrol aloft—the four-engined job was shot down.

With the report of the weather at Jaluit, and considering the cost of the mission, Admiral Fletcher realized that a second strike against that portion of the atoll, would mean a night recovery. Since his airmen were not proficient in night flying, he decided to withdraw that afternoon. It wasn't a particularly successful operation but it at least showed that America was fighting back, and Admiral Halsey's courage in striking into the core of the Japanese Mandates was a great boost to the low morale at home.

*Lexington*, which was to be honored as "Queen of the Flat-Tops," experienced her first real wartime action in a strike against Rabaul late in February. Vice-Admiral Wilson Brown, in command of a splinter task force of which the *Lex* was the carrier, was given this assignment as soon as it was realized that the Japanese intended to make Rabaul a major base of operations. Australian reconnaissance patrols showed daily arrivals of new transports and supply ships, indicating

the enemy was planning a new move to the south. To make this attack, Admiral Brown would have to steam round the southern end of the Solomon Islands, sail straight up the passageway between the enemy stronghold at Truk in the Carolines and this new Japanese base at Rabaul. The idea was to reach a position along the northern coast of New Ireland, a slender necklace of land swung across the northern approaches to Rabaul. Success in this would mean that he might be able to launch his air-striking force against Jap shipping in the roadstead, with some chance of using the cover of his natural shelter.

Early in the morning of February 20 *Lexington* had reached a point 400 miles off her goal. Her long-range scouts were combing all around the area for enemy patrols, for it was necessary to sail another 200 miles in order to assure a safe launching distance for the dive bombers and torpedo carriers. If they had luck, eight more hours of twenty-five-knot steaming should bring them to a jump-off area by early afternoon.

Trouble was promised when a scouting plane reported that a Japanese spotter had been shadowing this fleet. Captain Frederick C. Sherman sent up two pairs of fighter aircraft to eliminate the snooper. To do this effectively, he had selected Lieutenant Commander John S. Thach to lead this flight. Thach took Ensign Edward R. Sellstrom as his wing man. The second pair of fighter pilots were Lieutenant Onia B. Stanley and Ensign Leon W. Haynes.

But the prospects for interception were not too good. The area was clotted with cumulus clouds, heavy tropical rain squalls, and some nimbus cloud pattern was developing. Thach's duo had to climb through this murk but once they all broke through, the pairs split up and both began a systematic combing of the area. Thach was the fortunate one for he was the first to spot a big four-engined Kawanishi flying boat as it passed through a slit in the clouds. It might have been hard to miss since she was a copy of a French transport originally designed for passenger and mail service between Dakar and Brazil. She was even bigger than any of the Pan American Airways trans-Pacific Clippers of those days.

Thach tipped off his wing man and together they both went down and trapped the big flying boat well in the clear at the 5000-foot level. The Japanese pilot apparently saw them too, for he soon darted into a nearby cloud bank. Thach had a good idea where the enemy was and he set up a systematic survey of the cloud edges. It was good

planning for they were also using the thin fringe vapor as a screen for themselves.

In a few minutes the big Kawanishi appeared in the rain directly below at about 1500 feet.

This time Thach gave the Jap pilot plenty of time to get well clear of any other possible cover and when he had moved beyond his point of no return, Jimmy began his pass. He was still at long range but the Kawanishi gunners began firing and their tracer was zipping and sparkling all around Thach. At the distance it was obvious the enemy was firing a 20 mm. cannon which could cause plenty of damage. However, the two Americans continued to bore in and then Thach made his firing run and almost immediately he realized he had hit a fuel tank, for gasoline was spuming astern. Both fighter pilots turned, came back and started a second run from the opposite side, but by then the big plane seemed to be firing guns of many calibers from five or six ports.

On the second pass Thach's slugs started a real fire and the Kawanishi was in dire trouble. Great white sheets of flame spread out behind and as if to wriggle clear the flying boat began to spin down for the sea. One dedicated gunner in a rear turret continued to fire at his tormentors, for he was game to the last. His bullets came whipping across the smoke-stained sky and he only surrendered when the big flying boat finally piled up in the sea.

Thach figured he'd had a day and was ready to return when another scout reported there was a second enemy plane higher up. Thach and Sellstrom went back hoping for another kill when a message from fighter control aboard *Lexington* told them the second had been dealt with. One of *Lexington's* scouts had taken care of him and there was a rather funny story connected with the fight.

The scout plane which may have been a mile or so an hour faster than the Kawanishi flying boat, put on a memorable show. At level flight the carrier pilot could gain slightly, but when he tried to climb up to the enemy's level he would lose distance. There was nothing to do but to creep up and try to get well under him and still maintain comparative speed. Once this position was gained the Jap crew opened a bomb door and began firing down with light machine guns. The scout's rear gunner, taking up this challenge, opened fire with twin guns, aiming straight up and in a second or two, evidently scored on a fuel tank. The Jap flying boat began to burn beautifully.

On returning to their carrier, the fighters refreshed themselves, and

their planes were serviced for the afternoon's operations. Knowing that, although two shadowers had been shot down, one of them must have advised its base of the approach of the American task force, Admiral Brown persisted with his plan and kept steaming toward his objective. Captain Sherman aboard *Lexington* was not too happy with his situation, but he planned for any eventuality; his fighter and scout squadrons were disposed where they could offer the most help to give maximum strength if any formations appeared. The fighters orbited within twenty miles of the carrier, but the scouts went out much farther.

It was on this day that Lieutenant Edward H. O'Hare, who became known nationally as "Butch" O'Hare, shot down five Japanese aircraft and damaged another. When the first enemy planes were sighted, all the fighters were either in the air or spotted on the deck for launching. Commander Thach had six of his pilots at the ten-thousand-foot level, and another flight of six was about to go in to refuel. They were recalled quickly, and all re-formed to meet nine twin-engined bombers that were approaching in three V formations. They were land-based planes, Mitsubishi OB-97s, capable of better than three hundred miles per hour. Commander Thach declared that they were almost identical with the U. S. Army's Martin B-26s. They had guns in the upper turrets, as well as fixed nose guns, and 20-mm. air cannon.

In a running fight from a position about twelve miles away from *Lexington*, Thach's force shot down six of them, and the enemy eventually moved into range of the carrier's antiaircraft guns, but the Navy fighters stayed with the remaining three OB-97s. Two that were damaged by Thach's men were finished off by the ship's gunners, and the remaining one, also crippled, turned away and started to return to its base.

Then a second enemy formation came into sight and six Grummans on the deck were launched to take care of them. This flight, led by Lieutenant O'Hare, was to replace the one that had been going to land when the first enemy formation appeared. O'Hare and Thach had to collect their forces that were scattered all over the sky, to put on a defense against this second nine-plane attack. The instant the enemy was spotted O'Hare and his wing man went into action, but on testing his weapons, O'Hare's companion discovered they would not fire, and realizing that he might be more of a liability than an



asset, he turned away and flew back to have his guns, or interrupter gear, adjusted.

Thus O'Hare went into this action minus his wing man but there was no time to call in another. The Japs were moving up fast and someone had to stop them. In his first pass he took on the two trailers in the last V. He was really "on" for he had to pull up sharply to avoid a cloud of debris. He had aimed at the starboard engine in each plane and had kept his guns going until the Jap engines leaped right off their bearers.

With that Butch crossed over to the other side of the formation, and this time he aimed at the port engine of the nearest plane and was gratified to see that power plant jump out. The enemy skidded violently, rolled over and began to fall away, so O'Hare left him to his fate and went back and started firing at the trailer of the middle V. But he continued to aim at engines.

To his amazement, the same thing happened again. He can be excused if he decided that all one had to do to score was to put a fistful of .50-caliber slugs into an engine, and something magic took place. The engine of this fourth plane fell straight through the wing and then she began to burn.

By this time, the Japs, still maintaining some formation, were right on top of their release point. In spite of O'Hare's success the fun was over and the chips were down. These bombers had to be stopped somehow. Butch counted five of them maneuvering for position so he fired at the nearest until he fell away, completely out of the play. He had little ammunition left, so he snap-shot at the remainder until his guns stopped firing. When, by instinct, he checked his clock he was amazed to find that all this had happened in actually four minutes. Four minutes, five Japs—a reasonably fair deal!

Thach and his team had not been as close as O'Hare, but now they were in a position to take over. They could see Butch making his perfect attack runs, and realized that his shooting must be deadly, for at one time there were three blazing OB-97s tumbling down the sky, dragging plumes of saffron flame. Thach knew O'Hare was a competent workman but how he had lived through the curtain of fire the Jap gunners had put up was a miracle. Every time he moved in, the top turret guns would open up from every plane. They could see the enemy tracer sparkling all around him. He was flying like a moth daring a hundred candle flames.

Just as O'Hare knocked off his fifth victim, Thach's brood moved

within range and took over. They shot two more to wreckage, and the last two staggered away, losing height fast. These were all O'Hara had left for them.

Back aboard *Lexington* another drama was being enacted. While O'Hare, Thach & Company were beating up the opposition, a lone Japanese flier was attempting a Die-for-the-Emperor act. The pilot of the leading plane of the first formation had been hit early and had lost an engine; and he decided to go out in a blaze of glory. Instead of limping back to his base, he turned around and tried to attack *Lexington*. It took considerable courage and some skill to maintain control of his damaged aircraft.

He was first noticed coming in with his starboard engine wide open and screaming, aimed like a javelin for the carrier's stern. He had to pass over the destroyer screen guns and then risk the cruiser line. He was losing altitude fast and was a give-away target for the gunners; everything from five-inch rifles to mere .30-caliber machine-gun fire was poured at him, but to everyone's amazement he continued to come on, staggering, stumbling, apparently held up by his own boot straps. When he was down to the three-hundred-foot level he was actually bulling his way through a curtain of 1.1-inch and 20-mm. fire from *Lexington*, doggedly boring on until at last the hail of steel was too much. The pilot was evidently hit severely; his reflexes snapped him back hard, the nose of the suicide plane jerked up, and the craft began to lose flying speed. By the time it was within two hundred yards of *Lexington's* deck lip, it stalled out completely, the nose dropped, and it fell off into a steep dive straight into the sea. There was a column of green-white water, a greasy pillar of smoke, and a little debris to mark where it went in.

This general encounter with Japanese Army pilots taught U. S. Navy men much about their adversaries. The Japs had worked with skill and determination, and although both formations had been worked over before they could get into position to do their bombing, they had courageously continued their run-in, and did not release their bombs until they were falling in flames. Not one attempted to leave his burning plane by parachute. Whether they had these safety silks, is not known, but there is no question as to their bravery or loyalty.

It had been a good day for the airmen of *Lexington*. In addition to the two snooper flying boats destroyed that morning, sixteen of eighteen bombers had been shot down in the afternoon—two of these were credited to the antiaircraft gunners on the carrier. It might be

added that at the height of the "fun," Commander Arthur J. White, senior surgeon, and his assistants performed an appendectomy in the operating room. It was a success, but it did prevent the operating staff from viewing the more exciting activities aloft.

It was still an uphill battle. With the few wisps of success came continued reverses, minor and serious. When Java fell before the power of the Japanese Fleet in the Netherlands East Indies waters, Marshal Archibald Wavell, in charge of the British land forces, still believed that if sufficient Allied aircraft could be brought in, we might be able to hold the line, but after the enemy captured the island of Timor, fighter aircraft could be brought into the Java area only by sea.

Valuable carriers could not be risked, but it was agreed generally that the United States aircraft tender *Langley*, a thirty-three-year-old ex-collier, might conceivably do the job. Although she had been converted to a carrier back in 1922, *Langley* had for years been relegated to the many and colorless tasks of an auxiliary. This hazardous undertaking was a brave chance to get into the war's spotlight.

On February 22, loaded with thirty-two P-40 fighters and thirty-three Army Air Force pilots, *Langley*, along with *Sea Witch*, a freighter carrying twenty-seven more P-40s in her hold, sailed out of Fremantle, Australia, and joined a convoy headed for Bombay. They were escorted by the light cruiser U.S.S. *Phoenix* that had been detached from Admiral Leary's Anzac Force. It had been arranged that the three American ships would leave the Bombay convoy at a point near the Cocos Island, several hundred miles southwest of Sunda Strait, from where they were to make their way toward Tjilatjap on the southern coast of Java.

However, Admiral C. E. L. Helfrich, Chief of the Netherlands Naval Forces, who was burdened with a semimilitary, semipolitical position, ordered *Langley* and *Sea Witch* to be detached en route in an area much closer to Tjilatjap, and to proceed on alone—that is, without *Phoenix*. Vice-Admiral William A. Glassford, Jr., in command of Task Force 5 of the U. S. Asiatic Fleet was not consulted until very late in the operation, and the confusion and tragedy that resulted added little to inter-Allied amity or co-operation.

Tjilatjap was the only remaining port in the Javanese area where either ship could off-load their planes without possible enemy interference. There were no actual airstrips, and what spaces there were

had to be cleared and leveled to furnish areas from which the planes could be staged to move northward across Java.

The planes aboard *Sea Witch* were still in their crates and not immediately available, but those aboard *Langley*—if they could be gotten away—might make a great difference in the Java situation. As originally planned, both vessels were to be routed so as to make port early in the morning after a night run, the only safe way possible at the time. Time was of the essence, however, and Admiral Helfrich, assuming all responsibility, ordered *Langley* to make for Tjilatjap at top speed. Since up to then no Japanese had been sighted south of Java, Admiral Glassford added his approval, believing there was a chance that the airplane tender's movement by daylight might not be detected.

Commander Robert P. McConnell of *Langley* was advised that two U. S. destroyers, *Edsall* and *Whipple* would come out from Tjilatjap and escort him over the last anxious stretch of his run. He started his trip on February 23, hoping to arrive by the afternoon of February 27. His log reported nothing eventful until the afternoon of February 26 when two Dutch PBY Catalinas flew out to explain that a 1300-ton Netherlands minesweeper, *Willem van der Zaan*, was about an hour's sailing to the west, and heading to escort *Langley* into port.

Still believing two U. S. destroyers would pick him up, Commander McConnell ignored the Netherlander and steamed on, leaving the minesweeper in his fading wake; the U. S. commander was having trouble enough with the thin Borneo oil, for which his burners had not been adapted, and the best he could do was about ten knots. He continued on until after dark when a radio message from Admiral Glassford explained that the *Willem van der Zaan* was indeed his escort, along with the Dutch Catalinas, and to behave accordingly. With that, Commander McConnell reversed his course and sought the minesweeper. Instead, he found *Edsall* and *Whipple*, the two destroyers, being escorted by the flying boats. It was now 7:20 A.M., February 27, and more time was sacrificed while the destroyers worked over an enemy submarine contact, but this action brought no reward, so all three vessels headed for Tjilatjap.

The day was clear, fair and breezy, although there were some scattered high clouds that might furnish cover for snooping aircraft. At 9 A.M. a lookout spotted an unidentified plane and Commander McConnell sent a message to Admiral Glassford asking for some air cover. "Where would I get it?" the admiral replied.

By 11:40 more unidentified aircraft were spotted and Commander

McConnell felt uneasy. The fact of the matter was that Admiral N. Kondo's battleship and carrier fleet from the Japanese Southern Striking Force was already operating south of the Malay Barrier to hinder Allied reinforcements. When *Langley* left the convoy, Japanese flat-tops were obviously close behind, but it was not carrier-based aircraft that attacked *Langley*; instead, it was shore-based aircraft from the Eleventh Air Fleet that had been carrying out patrols from Kendari, Celebes, and Bandjermasin, Borneo, probing out into the Java Sea and Indian Ocean to keep tab on Allied movements. It was one of these snoopers that first sighted the aircraft tender and radioed for reinforcements.

Lookouts aboard *Langley* next spotted nine twin-engined bombers approaching at about fifteen thousand feet. Her guns opened fire immediately and Commander McConnell swung his ship in frantic twists and turns. The first salvo of Japanese bombs chugged into the water about one hundred feet to port. *Langley* swung hard again and a second salvo missed, but a third put five large bombs dead into her, and two near misses buckled hull plates.

The damage was severe and a number of planes on the stubby flight deck were set on fire—in a short time every plane topside was a total loss. The bridge steering gear, and all navigation instruments were destroyed, and as she began to list to port six Jap fighter planes came down to pepper the decks, but were driven off immediately by *Langley's* antiaircraft gunners.

Commander McConnell did his best to control the fire by reducing the windage, but there was a twenty-five-knot breeze. He jettisoned every burning plane and had his engineers carry out counterflooding measures with the hope of beaching his ship on the Java coast; it was not possible to negotiate the narrow mouth of Tjilatjap harbor. Every effort was made to save the tender, but the intruding water flooded both main engines and she wallowed to a halt. Her pumps could not cope with the flooding, and her damage control equipment was quite primitive. At 1:32 that afternoon, Commander McConnell decided to abandon ship while there was still an escort to pick up the survivors. Army aviation personnel and all but sixteen of the crew were rescued by *Whipple* and *Edsall*. The destroyers then scuttled the ancient tender with torpedoes and gunfire.

In contrast, the luckier *Sea Witch* made Tjilatjap, delivered her crated aircraft, picked up forty refugee soldiers and sneaked back to Australia unharmed.

As soon as Admiral Brown realized that his little fleet had lost all possibility of surprise in the proposed raid against Rabaul, he ordered a change of course and took his command in a southeasterly direction. Just north of New Caledonia a rendezvous was made with tankers, some mail was picked up, and by the end of February the *Lexington* force teamed up with Admiral Fletcher's *Yorktown*. By early March the enemy had pushed on from Rabaul to build a sizable airfield at Gasmata on the south coast of New Britain Island. They also established themselves on the mainland of New Guinea at Lae and Salamaua. These two roadsteads were the most important entry points to the area of New Guinea. Here, as in Malaya, Java, Sumatra, and Borneo, control of the coasts and ports meant control of the country since there was no internal communication system.

At Lae and Salamaua the Japs came in possession of two good airfields that had been used by the New Guinea Airways. They based a number of their bombers and fighters on these strips, and with these flew out to sea; their early patrols linked up with overseas flights back to Rabaul and then on to Truk. It was only a matter of time when this air linkage would allow the safe occupation by Japanese troops, and harbors for a strong naval fleet, that could result in another serious push south. The people of Australia were particularly concerned about this situation, and requested that something be done about it.

Supreme in their belief that nothing could stop them, the Japanese filled the harbors of Lae and Salamaua with warships, tankers, supply ships, and troop transports—taking Australia was just a matter of time.

But by March 10, U. S. Navy airmen from *Lexington* and *Yorktown*, in their first carrier raid, suddenly appeared out of the jungle skies of central New Guinea, flying dive bombers, torpedo bombers, and fighters, and smashed this enemy force in less than twenty minutes.

If they had lost the element of surprise at Rabaul, Admiral Brown's aviators made up for it over New Guinea. In planning the raid, they discovered that if they followed the coast from Port Moresby to Lae and Salamaua they would have to fly about 1500 miles, but if they set a course due north from Port Moresby over the mountains they could reach their targets in one hundred miles of flying. The gimmick was that the mountains were about 14,000 feet and although there might be some lower passes, they had no reliable charts to figure out a possible route; any forced landing in that jungle area meant dealing with tribes who ate one another on ceremonial occasions.

After winnowing through all available information on New Guinea,

Lieutenant Commander Weldon L. Hamilton, commander of the dive bombers off *Lexington*, and Commander William B. Ault learned that there was one pass through these high mountains where they might sneak through at 7500 feet. The gap was on a direct line between Salamaua and a deep-water stretch of the Gulf of Papua, less than fifty miles from shore. There was said to be a footpath through the pass, and explorers who had used it explained that the valley was usually cloud-free between 7:00 and 11:00 A.M. Admiral Brown set course and speed on the data from assorted sources, so as to launch his aircraft at 8:00 A.M. on March 10. Commander Ault went ahead of the bombers and torpedo planes to find the pass and was ordered to fly figure eights above it and guide the other planes through. This precaution paid off and all went well until the main force was within twenty-five miles of Salamaua Harbor.

The engine roar of such an aerial cavalcade soon aroused the Japs and by the time the fighters and torpedo planes were starting their dive attacks, several of the enemy warships had slipped their cables and were trying to make a run for it. The torpedo planes attacked the largest transports or enemy cruisers, while the fighters circled the harbor, daring the Zero fighters to come up and mix.

It was here that Lieutenant Noel A. M. Gayler picked up a Gold Star to add to the Navy Cross he was awarded at Bougainville in the Solomons. He tells his story as follows:

"We really surprised them, and there was only one Jappo airplane in the air when we arrived. This was a seaplane fighter mounting a rear gun, and to be frank, he put up quite a fight—while it lasted.

"He went after our torpedo planes which were down low poking around for targets, and he knew what he was doing. He went in and out like a shuttle, his rear guns harassing everyone. He was really good, but he couldn't stand prosperity and eventually pulled his boner. It was just too bad, but he would leave the torpedo planes and come up to challenge four of us fighters. Too bad."

Lieutenant Gayler simply depressed the nose of his plane and pressed the button.

This was all the opposition the Japanese put into the air and the antiaircraft fire from a few ships and a shore battery of heavy guns was not serious. The dive bombers, under Commander Hamilton, more than paid their keep this day. "I selected a very fine cruiser," Commander Hamilton reported when he returned, "which from

eight thousand feet looked like a sleek speed boat as it made for the open sea. A rather pretty sight, really.

"But either I was too engrossed in the panorama or I was too enthusiastic for I hadn't allowed for the wind at lower levels. I was drifted in my approach and my bomb missed—a near miss alongside the cruiser. But a pilot in my wake spotted my mistake, corrected for it and his bomb smacked the after deck, plunged on through and actually blew away the cruiser's stern. She sank within a few minutes.

"But our fighter pilots were amazing. Funny thing; when they found there were no enemy planes in the air, they made dummy runs with the torpedo planes and dive bombers to spread the antiaircraft fire. When that game was over, they amused themselves trying to drop small fragmentation bombs among the crews of the antiaircraft batteries on board the ships or ashore."

How the modern historian can be bewildered by reports and data written at the time, will be found in the various appraisals of the results of this two-pronged raid. One estimate, said to have been written aboard *Lexington* at the time, declares that only one U. S. airplane was lost. This one went down at Salamaua and "apparently made a safe landing on the water," indicating the pilot was taken prisoner. Another, written a short time later, explains that in the first burst of erratic antiaircraft fire, Ensign Joseph Phillip Johnson, pilot, and his gunner J. B. Jewell, RM3/c, were killed. Another report says that a plane of Scouting Two was shot down and the pilot lost. There is no mention of the seaman gunner.

In compiling the score, the staff of this combined carrier operation stated that five large transports, two heavy cruisers, one light cruiser, and one destroyer were actually sunk, a minelayer, and two destroyers were left burning. A seaplane carrier and a gunboat were said to be seriously damaged by bombs, and the fighters that attacked Lae claimed a seaplane fighter; matching the one downed by Lieutenant Gayler at Salamaua.

In contrast, Army Flying Fortresses that flew out of Townsville, Queensland, Australia, the next day to attack Lae and Salamaua, reported that everything was still afloat, but a check made after the war concluded that the carrier aircraft had actually sunk a large minesweeper, a 6000-ton transport, and the 6500-ton converted light cruiser, *Kongo Maru*, that was sent to the bottom by fliers off *Yorktown*.

The task force returned to Pearl Harbor on March 26, after fifty-four days at sea, an unprecedented cruise for the U. S. Navy in 1942.



Our fortunes in the Far East continued to be dim and disheartening all through this disastrous spring, but the British Royal Navy was also taking its bumps. The vital naval bases at Colombo and Trincomalee in Ceylon were an immediate threat to the progress the Japanese were making all through Burma, the Malay Peninsula, and Sumatra; forces for a counterattack on these newly won positions would probably be assembled at one or the other. Tokyo officials apparently decided that Ceylon should be given the Pearl Harbor treatment.

As a result, what Royal Navy vessels could be spared from the European campaign joined what was known as the British Eastern Fleet, then under command of Admiral Sir James Somerville. This force was quite powerful, since it included the battleships *Resolution*, *Ramillies*, *Warspite*, *Revenge*, and *Royal Sovereign*, and three aircraft carriers, *Formidable*, *Hermes*, and *Indomitable*. In addition Admiral Somerville had eight cruisers, fifteen destroyers, and five submarines, three of which were Dutch.

British intelligence learned that the Japanese would make a carrier strike against Ceylon on or about April 1. This enemy force, practically the same that had hit Pearl Harbor, was composed of the carriers *Zuikaku*, *Shokaku*, *Akagi*, *Hiryu*, and *Soryu*. These were supported by the battleships *Hiei*, *Haruna*, *Kongo*, and *Kirishima*. The heavy cruisers *Tone* and *Chikuma*, the light cruiser *Abukuma*, and eight destroyers completed Vice-Admiral Nagumo's force that had been refueling at Kendari in the Celebes. He moved out, heading for Ceylon on March 26.

Admiral Somerville guessed correctly that Admiral Nagumo would make his approach from the southeast, and although Somerville sent out adequate search forces well in time, his surface vessels stayed out only two days and two nights and picked up nothing. On the evening of April 2 they turned back and headed for Addu Atoll in the Maldive Islands, southwest of Ceylon, mainly to replenish their fresh water; they had run low, as the condensers aboard British battleships of the day were not equal to extended periods of high-speed steaming. As a matter of fact, the whole Eastern Fleet was either fueling or watering at Addu on the afternoon of April 4 when a British Catalina search plane, piloted by Squadron Leader Leonard J. Birchall of Number 413 Squadron, spotted a Japanese carrier force that was heading for Ceylon. Admiral Somerville dispersed what ships had been oiled, and left the rest to refuel as best they could from the few tankers available.

Squadron Leader Birchall never returned from his patrol and was

probably shot down by carrier-based fighters. Another Catalina made further night reports placing the enemy one hundred miles closer. Both these planes proved to be of utmost value to the British defense and possibly prevented serious damage to the shore installations.

Once he knew the score, Admiral Somerville disposed his force accordingly, and Vice-Admiral Sir Geoffrey Arbuthnot in command ashore at Colombo, ordered all shipping to be moved out of that city's harbor, but by the time the first wave of Japanese planes struck there were still about thirty vessels of various categories berthed there for as many reasons. This first wave consisted of at least seventy carrier-based fighters and bombers and, in contrast to Pearl Harbor, this time they concentrated on naval workshops and important harbor installations. But thirty-six Hurricanes and six Navy Fulmars attacked and destroyed sixteen of the enemy. Fifteen Hurricanes and four Fulmars were lost. Antiaircraft guns at the base accounted for five Japanese bombers.

Out at sea on this Easter Sunday, April 5, Japanese carrier bombers sank the cruisers *Dorsetshire* and *Cornwall*. Fifteen merchant ships were also sent to the bottom by torpedo or dive bombers from the Japanese carriers. There were 1100 survivors, but 425 officers and men were lost.

The next day a second attack staged against Ceylon was first spotted by R.A.F. Catalinas when sixty bombers went for the harbor at Trincomalee and the nearby airfield at China Bay. Much damage was inflicted but again seventeen Hurricanes and six Navy Fulmars that had more time to prepare for this attack, destroyed fifteen carrier planes and seriously damaged seventeen more; only eight Hurricanes and three Fulmars were lost. The base antiaircraft guns accounted for nine enemy aircraft. This valiant R.A.F. effort proved most costly to the Japanese, as will be seen.

At the time this strike was being made, the Japanese carrier force made strong attacks against the British vessels at sea. Admiral Somerville had played as cagey a game as he could, moving out of range by day and moving in at night, hoping to beat down the enemy with his superior gunfire, but on April 8, after much maneuvering, his force had to return to Addu for fuel and water. In the meantime a second carrier force under Vice-Admiral Jisaburo Ozawa that consisted of *Ryujo* and five heavy cruisers and a number of screening destroyers had been creating havoc in the Bay of Bengal. It was difficult to figure where the next strike would be made.

Admiral Arbuthnot made certain that the harbor at Colombo would be cleared, and it was well it was, for, on April 8, Admiral Nagumo struck again with ninety-one bombers and thirty-eight fighters that concentrated on harbor installations; only one merchantman was sunk. Nine British Blenheim bombers roared out hoping to nail a carrier, but arrived just too late; *Akagi* was recovering the last of her aircraft, and maneuvered to avoid the bombing. Antiaircraft fire downed five Benheims and the other four were damaged and were lucky to get back. Four Zero fighters were shot down by Blenheim gunners.

That afternoon, search planes from the Japanese Fleet picked up the British carrier *Hermes* and her escort destroyer *Vampire* that had steamed out of Trincomalee earlier and was making the return run. When these two vessels were off Batticaloa on the east coast of Ceylon they were attacked by a carrier group. The old British carrier had no planes aboard, she was hit by at least forty bombs and went down in twenty minutes. *Vampire* was next and went to the bottom under a terrific storm of dive-bombing. A nearby hospital ship rescued many of both crews, but more than three hundred officers and men were lost.

Admiral Nagumo was at the peak of his career, for in four months he had operated in waters covering an arc one-third of the way around the world. He had put on successful strikes against Pearl Harbor, Rabaul, Amboina near the Moluccas, Darwin, Australia, and off Java, Colombo, and Trincomalee. His aviators had sunk five battleships, one aircraft carrier, two cruisers and seven destroyers. They had severely damaged several more capital ships and sent to the bottom thousands of tons of fleet auxiliaries and merchantmen. Hundreds of Allied aircraft and valuable shore establishments had been destroyed—and not one ship of his striking force had been sunk or even damaged!

Yet, subsequent events were to prove that Admiral Nagumo would have been wiser to have stayed away from Ceylon, for the destruction of a good number of Japanese carrier planes by the R.A.F. and Royal Navy Fleet Air Arm paid unbelievable dividends to the Allies. Only two of Nagumo's carriers were able to participate in the Coral Sea battle fought one month later, the other three had to return to Japan and load new planes and train new pilots to replace the losses.

Japanese testimony, given after the war, indicated that the caliber of these replacements was inferior to that of the prewar airmen. This was noted particularly in the Battle of Midway. Had Yamamoto reconsidered the Indian Ocean raids, or had the British airmen bowed to

the enemy's will, the Japanese Carrier Group might have had better luck in the Coral Sea and Midway engagements.

Despite the success at Lae and Salamaua and other Japanese-held islands, the people of the United States were cast to the depths of despondency on receiving the news of the fall of Bataan. Nine days later, April 18, 1942, their spirits were greatly revived by the report that an American bomber formation, flying from some mysterious base known as Shangri-La, had laid a trail of fire and destruction across the main island of Honshu from Tokyo to Kobe.

Sixteen North American B-25 medium bombers, led by Lieutenant Colonel, later General, James H. Doolittle, had dropped the first installment of retaliation on the enemy mainland. No event in the war, prior to the Battle of Midway, gave America so much satisfaction as the news that the Japanese people had experienced the real impact of modern war.

Judged by European bombing standards, the actual damage was not great, but the raid must have had a grim psychological effect on the Japanese public despite strict censorship imposed by the home government. At the same time, because of its dramatic impact, the story was considerably overwritten, and by the time an official War Department communiqué was made public more than a year later, Jimmy Doolittle's raid, as it was generally known, had become more legend than fact.

Again, the varying claims made concerning the origination of this raid on Japan are confusing. According to some sources it was Jimmy Doolittle who conceived the plan; others give credit to Admiral Ernest J. King. Captain Donald B. Duncan, Admiral King's air operations officer, is said to have been put on the problem and he in turn put it up to General of the Army Air Force Henry H. Arnold. Lieutenant Colonel Doolittle was selected to pick the aircraft and air crews, and Captain Duncan arranged details of ship movement and the organization of a task force as the Navy's contribution.

The recently completed carrier U.S.S. *Hornet*, under command of Marc A. Mitscher, then a captain, was selected for the Shangri-La role. Early in February of 1942 *Hornet* had an abbreviated shakedown in the Caribbean, and instead of returning to base for a routine period of leave, she sailed to San Francisco Bay where a number of B-25 (Army) bombers from the Alameda Air Station were lashed down on her decks.

This was the beginning of the retaliation for Pearl Harbor. Something spectacular was needed to revive home spirits; also a name everyone could recognize. So far readers of newspapers and radio listeners had encountered places they had never heard of before—Kwajalein, Bataan, Corregidor, and Salamaua. If we could actually bomb Tokyo . . . But how could the capital city of Japan be reached? To put our available carriers within carrier-bomber range meant taking an enormous risk from enemy land-based aircraft; there were dozens of picket boats patrolling some five hundred miles off Tokyo Bay . . . How could they be bypassed? The problem was the lack of range of Navy carrier bombers.

But the Army's B-25s had the range and could carry a respectable load. There was a possibility they could be launched from carriers—but not recovered. They had to be flown off, sent to Tokyo, Kobe, Osaka, and Nagoya, and after drenching these cities with high explosive, or better yet, incendiaries, continue on and land on friendly fields in China.

As is now known, the Army supplied the planes, bombs, and air crews; the Navy the required flying know-how, the carrier and its defensive screen, and the courage to take these ships into an area that might become their graveyard.

The air crews were volunteers who had no idea what they had volunteered for until a few days before they flew off the deck of the *Hornet*. A few may have guessed, but if so, no one has ever claimed to have known. The training, carried out mainly at Eglin Field in Florida, consisted of taking off from a very limited area, a type of navigation few Air Force men had studied, and the use of a so-called twenty-cent bombsight to eliminate the risk of having their famous Norden bombsight captured by the enemy. They had also to know how to navigate over a wide ocean area. Later on they were shown maps and photographs of the terrain where they would eventually seek sanctuary. This training was considerably different from that designed for American bomber forces that were to work with the R.A.F. out of Britain.

*Hornet* and her strange complement sailed from San Francisco on April 2, 1942, escorted by the cruisers *Vincennes* and *Nashville*, and four destroyers. The fleet oiler *Cimarron* accompanied them to do the necessary refueling. Navy men instructed the Army air crews in more than navigation and carrier-deck technique; there were routine Navy customs and shipboard behavior to be absorbed. Lieutenant

Stephen Jurika, former Assistant Naval Attaché at Tokyo, had dozens of photographs and maps of the target areas which he carefully interpreted for the bombardiers. There were talks on naval equipment, and the identification of naval vessels, while Navy mechanics helped to prepare the B-25s for their great adventure. The crewmen of the *Hornet* had dismantled many of their Wildcats and Devastators and packed them away in every available space to make room for the Army planes; some of the Navy aircraft were hung from overhead girders. Except for her own antiaircraft batteries, the brand new carrier was defenseless in this condition until she made her rendezvous with Task Force 16 on the morning of April 13.

Vice-Admiral William F. Halsey, Jr., aboard the carrier *Enterprise*, was in command of Task Force 16. Besides *Hornet*, he had the cruisers *Northampton*, *Salt Lake City*, *Vincennes*, and *Nashville*, under the command of Rear Admiral Raymond A. Spruance. Two destroyer divisions, under Captain Richard L. Connolly, provided the screen, and *Sabine* and *Cimarron* were the force's oilers.

The planning for flights into and landing on Chinese airfields was rudimentary. Generalissimo Chiang Kai-shek had been advised that a number of U. S. Army bombers would fly over "to help China," and would require suitable fields on which to land, but the Generalissimo took his own time about designating any strips until April 14, and Lieutenant Colonel Doolittle had to assume that the airbase in Chuchow in Chekiang Province, about fifty miles inland from Wenchow, was to be his final destination. What he did not know was that due to a period of very bad weather, the field could not be prepared in time for the Mitchell bombers. The Chuchow field was 1093 nautical miles distant from Tokyo and to get there the B-25s, carrying four 500-pound bombs and a maximum load of 1141 gallons of gasoline, would have to launch about five hundred miles off the Japanese coast.

Plans for a launching from such a point on April 18 were made by Admiral Halsey—this would provide time brackets for a night attack. Thirteen planes were to clobber the Tokyo area while three were to attack Nagoya, Osaka, and Kobe. Doolittle was to precede the rest of his force by about three hours and drop a load of incendiaries on Tokyo to provide pathfinder fires for the rest to work on. Unfortunately, early in the morning of April 18 when Task Force 16 was still 700 miles from land, a radar screen warned that two vessels of some kind were ahead. Admiral Halsey altered course while *Enterprise* sent

off two reconnaissance planes that at 5 A.M. reported still another vessel about forty miles ahead. There was some evidence that this picket boat had radioed a warning, and a quick decision had to be made. If a definite warning had been sent, Admiral Halsey, who by now had left his destroyers and oilers behind, faced the risk of having his force attacked by land-based bombers; *Nashville* had moved in fast and sunk this third picket ship, but there was no assurance that it had not warned the Japanese Fleet or Air Force.

Lieutenant Colonel Doolittle realized that all surprise had been lost, and, although they were still 650 miles from Tokyo and it was doubtful that they would have enough gasoline to reach China, he knew that *Hornet* would have to retire. There was no question—they had to take the risk and Doolittle was the first to race down the carrier deck. *Hornet* was exactly 623 miles from the nearest land and 688 miles from Tokyo, but all sixteen B-25 crews accepted the gauge and took off safely.

As a small recompense for this ill luck, Tokyo had been alerted for a practice air raid in which Japanese aircraft had made a series of mock attacks on the city—probably to the annoyance of the population. This city-wide exercise was completed just before noon, and commerce and business was returning to normal when suddenly a number of new bombers appeared, and the guns began to fire again, this time with venom and heat. The people of Tokyo thought this was a second section of the practice performance and until Doolittle's raid was over, few of them realized that an actual attack had been made. If the picket boat had warned Japanese authorities, nothing much had been done about it, for the B-25s encountered little trouble over their targets. No alert was sounded until they had been in the enemy area for nearly twenty minutes. By 12:25 P.M. all thirteen B-25s that were assigned to beat up the city were selecting their targets with little annoyance from enemy fighters or antiaircraft guns. The fighters made little attempt to harass the raiders and kept away from the tail-turret guns which were in plain view—but actually dummies. The real turrets, mountings, and guns had been displaced by extra gasoline tanks.

The three Mitchells assigned to Nagoya, Kobe, and Osaka delivered only incendiary bombs. The Nagoya plane apparently did a workman-like job—Kobe was well drenched—but the B-25 sent to Osaka appears to have attacked Nagoya instead. Not one of the attacking planes was lost over Japan; one had fuel trouble and headed for "friendly" territory in Vladivostok where the Russians impounded the

plane and interned the crew. Those that did get through to Chuchow missed it completely, for the Chinese, in the belief that they were Japs, sounded their raid alarm and doused all field lights. Four of the bombers made crash landings, while crews of eleven others bailed out in the black night, thumping down slippery cliffs or plopping into bogs and lakes. One crewman was killed when his chute failed to open, four were drowned. Those who lived were taken in by friendly villagers and passed on to Chungking.

One B-25 came down off the China coast near Ningpo (Ningsien), and the pilot and two crewmen who successfully reached shore were captured by the Japanese. Another crew of eight men that bailed out near Nanchang was picked up and tried by a military court and sentenced to death. Lieutenant Dean E. Hallmark, Lieutenant William G. Farrow, and Sergeant Harold A. Spatz were executed; the rest had their sentences commuted to life imprisonment. One of this group died in prison before the end of the war brought release. Seventy-one of the eighty pilots and crewmen, including Lieutenant Colonel Doolittle, survived this raid on Tokyo.

Although the bombing in itself hardly balanced the effort, for no vital targets were actually destroyed, the raid had some practical results. For one thing, at least four Japanese Army fighter-plane groups that must have been urgently needed elsewhere, were pinned down for the defense of Tokyo and other Japanese centers. More important, the higher command was astonished that such a raid could be made by land planes, and as a result decided that President Roosevelt's Shangri-La must be the island of Midway. They, therefore, extended their potential, and expedited plans for what was to become the Battle of Midway. That alone, since it was America's greatest naval victory, was well worth this gallant Army-Navy effort.

Admiral Halsey, who was in on the thrust from the beginning, declared, "In my opinion their flight was one of the most courageous deeds in military history."

In May 1942 the British carrier *Illustrious*, now back with the fleet, and *Indomitable* played a memorable part in the sea and air defeat of the Vichy French forces at Diego-Suarez on the northern tip of the island of Madagascar, about three hundred miles off the coast of Portuguese East Africa. Although this island is separated from Ceylon by the breadth of the Indian Ocean, Prime Minister Churchill felt



there was a possibility of Vichy French treachery and the Japanese using Diego-Suarez as an air, submarine, or cruiser base. For some time the British had considered establishing themselves there with an expedition out of Egypt or South Africa. As early as December 1941, shortly after Japan had entered the war, General de Gaulle had urged a Free French operation against Madagascar. When all variables had been considered it was obvious that Diego-Suarez would have to be taken and as a result Operation Ironclad was drawn up and carried out.

The British expedition had assembled at Durban, South Africa, by April 22 and included the battleship *Ramillies*, the carriers *Illustrious* and *Indomitable*, two cruisers and eleven destroyers to guard the minesweepers, corvettes, and fifteen assault ships and transports that carried the invasion troops. This was Britain's first large-scale amphibious assault since the ill-fated Dardanelles crusade more than a quarter of a century before. While the slower vessels of the convoy had gone on ahead, the main body did not leave Durban until April 28. By May 4 the whole expedition was within striking distance.

This was not by any means a simple operation. The approach from the east was strongly guarded, but to the west were hospitable bays, capable of accommodating large ships. The defenses here were unimportant but the transports had to be guided in the dark through dangerous, shallow channels. On May 5 the first troops landed at 4:30 A.M. and quickly wiped out the only battery capable of firing seaward. Half an hour later, aircraft from the carriers attacked airfields and shipping in Diego-Suarez Bay. By that afternoon one whole British brigade and its equipment had been put ashore and the commando raiders had reached the eastern end of the Andranka peninsula. At 11 A.M., May 7, the area had been taken with the loss of less than four hundred Army casualties.

The carrier airmen attacked with bombs, torpedoes, and air-cannon fire, and put three Vichy-French warships out of action. They were the submarine *Beveziers*, an armed merchant cruiser, the *Bougainville*, and the *d'Entrecasteaux*, an armed naval sloop. But this victory had to be paid for when on May 29 an unknown aircraft appeared over the harbor and then flew away. The following evening the battleship *Ramillies* and a tanker were struck by torpedoes. No one knew from where they had come, but Prime Minister Churchill was of the opinion that they had been fired by a Vichy-French sub-

marine or a Japanese submarine, and on the strength of this he decided that all Vichy control in the area should be eliminated. This island of great strategic importance was taken over and the safety of Allied communications in the Near and Far East assured.

## CHAPTER VI

### FROM CORAL TO MIDWAY

FLUSHED with the saki of victory, the Japanese were to enjoy this unexpected pleasure for only a few months before the painful throb of retribution set in. No sooner had they scaled the heights of their advance than they were shoved back by two naval defeats that were to mark the turn of the samurai tide.

In early May 1942 the Imperial Navy started the first stage of a three-pronged operation that was intended to extend the perimeter of victory to envelop northern and eastern Australia. They had occupied the eastern Solomons and begun the construction of a major airfield on Guadalcanal. A strong naval force sailed to support a troop convoy that was headed for Port Moresby on the southern shore of eastern New Guinea. An American force of almost equal strength was in the Coral Sea to challenge them, and on May 4 there ensued the first naval action to be fought entirely in the air in which the opposing fleets never came within sight or gunshot range of each other.

This beginning of the American offensive in the Pacific became known as the Battle of the Coral Sea and had considerable influence in the planning and outcome of the Battle of Midway that followed. Jimmy Doolittle's raid on Tokyo, and President Roosevelt's jocular reference to Shangri-La as its origination, precipitated the Midway engagement. That the aircraft involved had actually flown off a U. S. Navy carrier did not enter the minds of the enemy. When the officers of the Imperial General Staff pored over their charts, they at first agreed that the strike might have come from the Aleutians, but since they had no knowledge of an air base in that tundra territory, it was simpler to assume that Midway Island, about 2250 miles east of Tokyo, was the only other possibility. After viewing the damage inflicted on

Tokyo, and the all-important loss of face, some Japanese Naval authorities pointed out the logic of seizing Midway Island, and Admiral Isoroku Yamamoto, Commander-in-Chief, decided to pinch off this threat to the homeland.

In the meantime Vice-Admiral Shigeyoshi Inouye's Fourth Fleet had begun a long-planned invasion of Allied holdings in the Coral Sea. Admiral Inouye was aboard the light cruiser *Kashima* anchored at Rabaul, and had under his command the carriers *Zuikaku* and *Shokaku*, the heavy cruisers *Myoko* and *Haguro*, a whole force of invasion auxiliaries, and 134 land-based aircraft that were commanded by Rear Admiral Sadoyoshi Yamada who had air groups at Truk in the Carolines, Rabaul, New Britain, Shortland, Tulagi, Tainan, and Genzan in the Solomons. With this combined force Admiral Inouye planned to invade Tulagi, and eventually capture Port Moresby, but the unexpected appearance of the American task force that had raided Lae and Salamaua on New Guinea, interrupted this plan until the Japanese Fourth Fleet could be reinforced.

However, an unopposed successful landing was made May 3 on Tulagi, since Admiral Fletcher's Task Force 17 was more than five hundred miles away. In this operation the Japanese had struck unexpectedly, for U. S. Naval intelligence had been unable to cope with the varied enemy movements in this area. Once again, we encounter variances of opinion, conflicting reports, charges, and countercharges. The best to be made of available information indicates that Admiral Fletcher's fleet that had been joined by another commanded by Rear Admiral Aubrey W. Fitch aboard *Lexington*, was conducting leisurely refueling operations some distance off Espiritu Santo in the New Hebrides when the Japanese started their move. Because of scant intelligence, and lack of fleet tankers to speed up the refueling, Fletcher had to move off fast on May 4, leaving the *Lexington* force to join him as soon as possible.

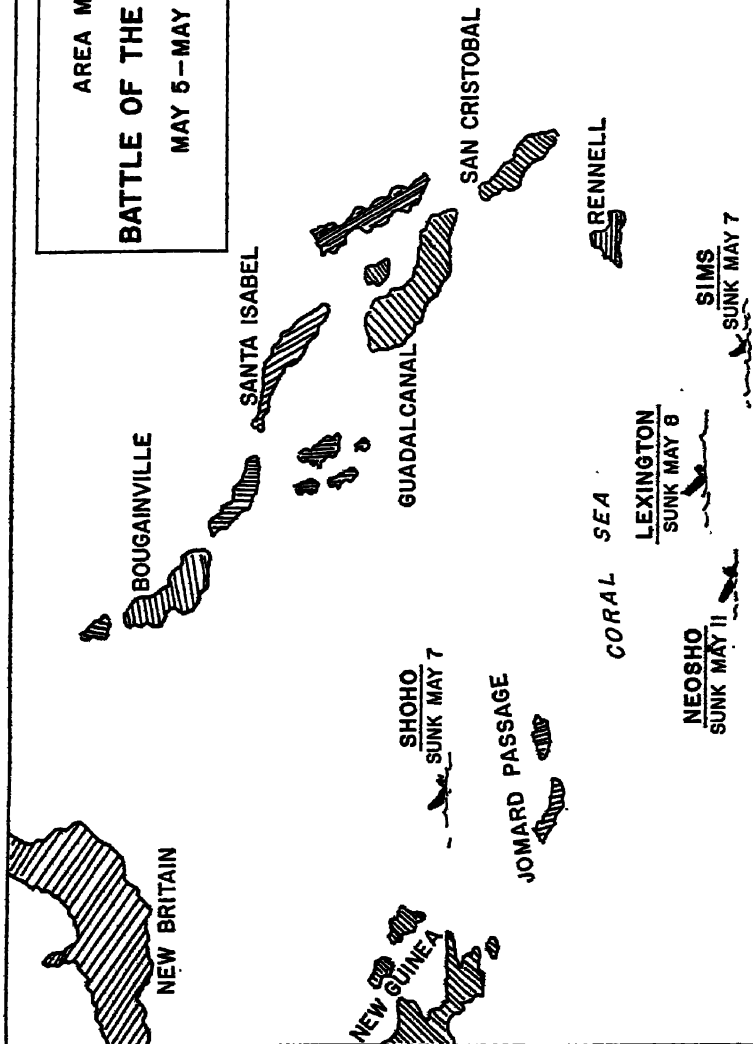
Admiral Fletcher expected only to intercept anything offensive in the Solomons-New Guinea area. Admiral Inouye, with his big carriers screened north of Bougainville well out of air-search range, initiated the Tulagi landing, and planned to enter the Coral Sea from eastward on the same day.

Admiral Fletcher continued on his northerly course and, learning of the Japanese move, decided to steam straight into the center of the Coral Sea from where he hoped to trace the enemy naval force by air

AREA MAP

# BATTLE OF THE CORAL SEA

MAY 5 - MAY 8 1942





search from *Yorktown*. Admiral Fitch was ordered to follow as soon as he was available.

When the Japanese indicated that their move was intended as a full-out invasion, Admiral Fletcher, then five hundred miles from Tulagi, decided to go on farther, and sent his oiler *Neosho*, escorted by the destroyer *Russell*, back to meet Admiral Fitch's force that by then would be about one hundred miles away. Fitch was ordered to meet the *Yorktown* force at a point three hundred miles south of Guadalcanal by daybreak of May 5. What happened from this point on is difficult to decide, and to belay the subject would be wearisome. In the end, Admiral Fletcher's force moved in to stage air strikes against Tulagi, while Admiral Fitch suddenly turned off on a south-easterly course, increasing the distance between the two carrier forces.

Meanwhile Admiral Fletcher had nudged *Yorktown* into some conveniently foul weather, while the air space over Tulagi was reported to be clear and fine. At 6:30 A.M., May 4, twelve Devastators and twenty-eight Dauntless dive bombers were launched. Six Wildcat fighters also went aloft to fly combat cover for the carrier, and antisubmarine sweeps were made by float planes off the cruisers—presumably *Minneapolis* and *New Orleans*.

This carrierborne air attack on Tulagi reads well in the early reports, but calm post-action consideration shows that the air-crew claims were overemphasized. It was all very new to American airmen and a mine-layer often looked like a light cruiser, and an ordinary transport was generally identified as a seaplane tender. Landing barges were blown up to gunboats, and near misses usually went down an enemy funnel.

In the final analysis the scout bombers delivered thirteen 1000-pound bombs and damaged the destroyer *Kikuzuki* so seriously, she had to be beached, and two small minesweepers were sunk. Five minutes after the SBDs pulled out, a torpedo-plane flight, under Lieutenant Commander Joseph Taylor, delivered eleven "fish" but succeeded in sinking only the minesweeper *Tama Maru*. At 8:30 shipboard bombers dropped fifteen more 1000-pounders but inflicted only minor damage on a couple of vessels. All these planes returned safely, and were sent streaming off the decks again for a second attack before the pilots had time to break into the Navy's round-the-clock coffee ceremony.

Twenty-seven SBDs with 1000-pounders, and eleven torpedo bombers were launched in the second strike and this time they damaged a patrol craft and destroyed two seaplanes. The torpedo bombers all

delivered their contributions but one plane failed to return, presumably a victim of heavy anti-aircraft fire.

The fighter pilots over the carrier were warned of three large sea-planes that were anchored off Makambo Island in Tulagi Harbor, so they peeled off and went after them. They performed a neat .50-caliber stitching on the Japanese hulls, and then spotted the destroyer *Yuzuki* trying to get away. They made four beat-up runs over her, killed her captain on his bridge, and many crew members. Two of the four Wildcat pilots involved in this wild foray became lost, and unable to find their carrier, crash-landed on the south coast of Guadalcanal, but both airmen were rescued that night in a smart operation by the destroyer *Hammann*.

A third attack was launched against Tulagi at 2 P.M. when twenty-one SBDs dropped half-ton bombs, but sank only four landing barges. So enthused were the air crews with their performance, however, that it was believed that most of the Japanese fleet in that area had been destroyed, and some consideration was given the idea of sending *Astoria* and *Chester*, two heavy cruisers, into Savo Island to mop-up what was left. But this idea was abandoned and it was well it was, for both would probably have met Admiral Inouye's carrier planes and never returned to tell what had happened.

The *Yorktown* group played in luck also. The Japanese carrier force was too far away to respond to the Tulagi base commander's appeal for aid, since it was refueling north of Bougainville and although Vice-Admiral Takeo Takagi put on a turn of speed southeastward, he could not make the interception. By then Admiral Fletcher could have expected no help from Admiral Fitch's *Lexington* group, for they were miles away.

After recovering all his aircraft and stowing them away, Admiral Fletcher turned south and sailed to meet Admiral Fitch at their scheduled rendezvous, and Inouye launched most of his planes for a bombing attack against Port Moresby.

With what seemed like a very successful attack effort Task Force 17 felt proud of itself, and probably looked forward to some well-earned liberty in Australia. May 5 was spent refueling from *Neosho* and at seven-thirty that evening Admiral Fletcher decided to head northwest, assuming that some of the enemy vessels would be moving out of Rabaul. At the same time a Japanese Port Moresby invasion group, and its support, were steaming on a southerly course for the Jomard Passage which cuts through the Louisiade Archipelago. Ad-



miral Takagi's striking force was churning along the outer fringes of the Solomons, and by May 6 this carrier group was well inside the Coral Sea.

It was a tense, anxious day, for everyone sensed that something historic was in the air. Admiral Fletcher resumed his original assignment of harassing ships, shipping, and aircraft at favorable opportunities. He then decided that if the enemy put out anything worth a full task force's attention, he would delegate the command of air operations to Admiral Fitch, who was an experienced carrier commander, but unfortunately, this honor was not forwarded to Fitch until a few minutes before the critical action of May 8 had started.

Over the next few hours a plethora of "hot" information came out of Pearl Harbor and bases in Australia, all to the effect that innumerable enemy ships were converging on waters south of the Solomons. All this intelligence came in large doses, but no accurate interpretation was included and little sense could be made of it. Air search was inadequate, the disposition of the various enemy forces was unknown, and as a result *Yorktown* and *Lexington* plodded on on their northwesterly course, unaware that the Takagi carrier force was moving on Fletcher's line of advance. Both groups were actually but seventy miles away from each other, both refueling, not realizing the other was in the vicinity. Had Admirals Fletcher or Takagi made a successful air search either might have caught the other as a sitting duck.

As it was, a Japanese search plane out of Rabaul did spot Fletcher's force at 11 A.M. on May 6, but Admiral Takagi was not advised. As has been pointed out, the Battle of the Coral Sea should have been fought on May 6, and might have been had Admirals Fletcher and Takagi known the other was near. Ironically, it was on this day that General Jonathan M. Wainwright had to surrender his forces in the Philippines, but happier days were to begin with the morrow. For one thing, at nine o'clock on the morning of May 7 Admiral Inouye postponed the advance of his Port Moresby invasion group, because by then he "suspected the presence" of the Allied task force.

At 5:55 P.M., May 6 the oiler *Neosho*, known affectionately as The Fat Lady, and the destroyer *Sims* were detached from Admiral Fletcher's task force and told to rendezvous at Point "Rye" to the south. They reached this position at 8:10 the next morning and observed what they believed to be two planes from one of their own carriers

—they were actually from the Japanese Fifth Carrier Division of Admiral Takagi's striking force.

About an hour later a single plane hove into sight and dropped a bomb near the U. S. destroyer, and both vessels took evasive tactics, and managed to wriggle through a storm of bombs that were then delivered by fifteen high-level bombers. At 10:38 ten more made a dive-bombing attack on *Sims*, whose helmsman swung her hard right and once more she came out unscathed. By noon thirty-six dive bombers were overhead and *Sims* curled around to get on *Neosho's* port quarter. These planes, having been advised that a carrier and a cruiser were available for the taking, concentrated on the oiler in the presumption that she was the flat-top. They went in from astern in three bristling waves, and the gunners aboard *Sims* did their utmost to bat them down. One of the destroyer's 20-mm. guns jammed almost immediately, and her main battery downed only one dive bomber, but while she was putting up this brave effort three 500-pound bombs went in dead-on; two exploded in her engine room, and the third nipped off her fantail. *Sims* buckled amidships and went down stern first.

The remaining hands started to abandon ship, but just as her single stack was going under, a terrific explosion lifted her out of the water and smaller explosions, presumably from her depth charges, added to the tragedy. Only fifteen crewmen were brought away safely, principally through the heroic efforts of Chief Signalman R. J. Dicken who retrieved a damaged whaleboat and kept it afloat while he picked up any sailors who were still alive.

The ill-fated *Fat Lady* was the next victim when twenty of the original thirty-six dive bombers worked her over—seven direct hits and as many near misses sealed her doom. One suicide dive-bomber pilot bashed his aircraft dead into the Number 4 gun station and the carnage that followed can be vividly imagined. Gasoline from the dive-bomber's tanks torrented along the deck and as it ignited, draped a shroud of flame over everything. Captain J. S. Phillips, *Neosho's* skipper, ordered all hands to stand by and insisted that no one abandon ship until the order was given. A few, of course, had little choice. Most of them had seen *Sims* blow up and sink, so there was some understandable panic. A few rafts and whaleboats were launched, but most of these terrified evacuees were ordered back aboard. In the midst of this confusion the ship's navigator took a hurried "fix,"

plotted incorrectly, and sent out a faulty position with the result that the search for the survivors was delayed.

Miraculously, *Fat Lady* did not sink immediately, and it must be presumed that she had several empty fuel tanks that had probably been sealed off to furnish buoyancy. The oiler drifted westerly for four days while every effort was made to keep her afloat. The wounded were cared for as well as conditions would permit, and the dead were commended to the deep. PBY planes went out and searched, but it was not until May 9 that the destroyer *Henley* was dispatched to pick up rafts and boats, and to take off the rest of *Neosho's* crew. Owing to the mistake in navigation, the oiler was not located until May 11 when the remaining 123 men aboard were taken off and the *Fat Lady* was scuttled. The search was continued for the survivors aboard floats and boats, and the last of them, sixty-eight men on four rafts lashed together, were picked up as late as May 17. After this unfortunate experience the Navy undertook to redesign and improve all life rafts, and gave seamen more specific directions for raft navigation.

As part of Admiral Fletcher's task force, a support group, known as TG 17.3, composed of two Australian cruisers, and the U.S.S. *Chicago*, and a two-ship destroyer screen, was in command of Rear Admiral John G. Crace of the British Navy. On May 7 Admiral Fletcher, who was then heading north toward the island of Rossel in the Louisiade Archipelago, ordered Admiral Crace to take his cruiser force off toward the southern end of Jomard Passage. Some intelligence had indicated that the Japanese Port Moresby invasion group might be caught in that area. He intimated later that he also wanted to make sure that, in case of an air battle with enemy carriers, the Japanese invasion would be nipped off no matter how the carrier-versus-carrier battle went.

Admirals Fletcher and Crace got on well and this TF 17 association proved once more that ships of the two nations could be welded into an excellent tactical unit, and that co-operation could be enjoyed notwithstanding "unexpected developments" that in this case proved almost tragic.

Forming his force into a diamond-shaped, antiaircraft formation, Admiral Crace put on twenty-five knots and steamed for action. A short time later a lookout aboard *Chicago* spotted a twin-float monoplane that was snooping about just beyond gunnery range. A few minutes later, U. S. Army reconnaissance planes out of Australia hove

into sight, flew away, and returned two hours later. From all accounts, they decided on their first appearance that Crace's force was enemy. On the second flight over, they took another look and apparently were positive.

At 1:58 when Admiral Crace had reached a point south and west of Jomard Passage, his force was attacked by eleven single-engined land-based bombers. TG 17.3 put up a remarkable display of anti-aircraft fire and the visitors were driven off. A short time later radar aboard the Australian cruisers, *Hobart* and *Australia*, picked up twelve Japanese Sally Navy-bombers when they were still seventy-five miles away. Admiral Crace ordered violent evasive measures and had every vessel in his command ready to open fire when the enemy planes came in low. Eight torpedoes were dropped, not one found a target, and five torpedo bombers were shot down. To overcome this ill luck, nineteen more Sallys attacked from high level with conventional bombs. Again Crace's fleet dodged and darted to evade every missile, when suddenly the destroyer *Farragut* was attacked by three U. S. Army bombers. Fortunately, their aim was as inadequate as their ship identification, but a photographer aboard one of the B-17s unwittingly provided the evidence which proved that a formation of U. S. bombers from Townsville, Australia, had made the attack.

Admiral Crace was understandably nettled and made a formal complaint to Admiral Leary, Commander-in-Chief of the Anzac Force. Admiral Leary replied that he hoped to set up plans in which the Army would improve its recognition of naval vessels. The AAF commander concerned declined the offer, and to this day insists that his bombers had not attacked Admiral Crace's ships.

Admiral Crace's effort will be the more appreciated when it is explained that he brought his whole force through an attack of the same type and strength that had sunk the *Prince of Wales* and *Repulse* a few months before. His support group went through without a single hit. The Japanese, of course, were positive that they had racked up another great victory and claimed that they had sunk an *Augusta*-class cruiser and a *California*-class battleship, and put torpedoes into another battleship resembling H.M.S. *Warspite*.

Once Admiral Fletcher had reorganized his forces he sent Admiral Crace off to the northwest. He next launched a search mission, and shortly after, a plane from *Yorktown* reported two carriers and four heavy cruisers at a position 175 miles to the northwestward, well the

other side of the Louisiades. After considerable excitement and the launching of an air-attack force, the two carriers and four heavy cruisers were reassessed to two heavy cruisers and two destroyers. Eventually they turned out to be part of Admiral Kuninori Marumo's command, a support group of the Moresby invasion force. Thus, while the two main carrier fleets were closing in on each other, Admiral Fletcher's all-out air strike had been mistakenly sent out against two prehistoric cruisers that were being screened by some modified gunboats.

There can be little argument as to which side Providence was leaning at this particular period. Fortunately, Admiral Inouye had turned his attention to Admiral Crace's group, and was ordering his Port Moresby invasion group to turn back at Jomard Passage.

The air group off *Lexington*, under Commander W. B. Ault, was some distance ahead of the planes from *Yorktown* and passed over Tagula Island around 11 A.M. Lieutenant Commander W. L. Hamilton who was flying one of the scout planes was the first to spot a single carrier—*Shoho*—some heavy cruisers, and several destroyers. The Japanese commander, Rear Admiral Goto, of the covering group went into evasive tactics just as Commander Ault, with two wing planes, began the attack. Ninety-three planes finally worked over this lone carrier.

It was a very clear day and visibility was very good. They had spotted this enemy force when it was about forty miles away. The vessels looked just like white hairs on the blue sea. At the time, Hamilton estimated that they were about twenty miles away but time soon corrected him and eventually he was able to distinguish the carrier by the reflection of the sun off its light-colored flight deck.

Hamilton's force came out of the sun almost exactly down wind and they immediately commenced the attack. Commander Bob Dixon's scout bombers had struck and cleared. Dixon had brought them around in order to turn to the left and they were just starting a second turn when Hamilton's formation went in. They were trying to coordinate their strike with that of the torpedo bombers.

The U. S. Navy planes had started from 16,500 feet and nosed down steep into the final dive from about 12,000 feet. The enemy carrier was exactly down wind as Hamilton nosed down on this apparently simple target. His first bomb, a 1000-pounder, to go home, smacked into the middle of *Shoho's* flight deck, just abaft amidships. By the time he could look back, the entire after section of the flight

deck was ablaze and a great column of smoke was gathering which he hoped would rise and mark the carrier's finish.

As Commander Hamilton watched the rest of his squadron run in, he noticed some were missing this comparatively simple target. He quickly realized that the wind had fooled them for most of their bombs were falling well down wind. He went on his radio and began giving corrections and useful advice.

Commander Dixon who was leading his scouts which had been converted into dive bombers carrying one 500-pounder and two 100-pound bombs also began a concerted attack from the 12,000-foot level.

There were some enemy Zekes in the air but they did not reach the converted scouts in time, or until they were well into their attack dives. A few Zekes followed them down but they were too speedy and raced past their targets which were using their air brakes. Dixon's pilots were thus able to maintain a speed of 250 mph. One or two Japs tried lowering their flaps and some even dropped their landing gear for braking effect, but it was not enough. A few tried zooming chandelles to fire at the planes following, and as a result, all through the dive-bombing attack they had a terrific free-for-all. The Zekes stayed with the opposition all the way down to the water.

The dive bombers all went for the carrier and the unfortunate *Shoho* was caught cold. There were a few planes on her deck and one was being brought up on an elevator. The attacking ships released their bombs at about one thousand feet off the water. The result was a memorable sight.

The screen craft around the carrier were throwing up a wicked curtain of shells and the attackers and the diving Zekes all had to bore through this barrage, but in all probability none of them realized this particular danger. Dixon's attack was perfect and his mates saw his 500-pounder hit amidships, wrecking the flight deck. Ensign P. F. Neely, flying behind Dixon, put a 500-pounder in the water, a near miss on the carrier's port side that blew two burning planes clean off the deck into the water. Ensign Smith dropped his donation smack on an antiaircraft battery, and this explosion tossed three more planes overboard. Ensign John A. Leppla, who had been annoyed all the way down by Zeke fighters, left them to his rear gunner, John Liska, who sat firing over his own rudder, driving off anything that irritated him—two in particular took .30-caliber bullets in their tanks and burst into flames and fell into the sea. Ensign Leppla, on seeing a Zeke harassing another Navy dive bomber, eased out of his dive slightly, brought the

Jap fighter into his sights and shot it down with a short burst. In spite of this distraction and the fact that the carrier had started another turn, Leppla did get in a telling near miss that must have buckled many hull plates. Irrked by this comparative failure, Ensign Leppla zoomed away, climbed to four thousand feet and dive-bombed one of the Japanese cruiser-escorts with his two 100-pounders, one of which drilled her stern, a very vital spot on any cruiser—her screws or rudder could be disabled.

Ensign O. J. Shultz put his bomb smack on the carrier and was attacked immediately by four Zeke fighters. His rear gunner earned his day's pay by shooting down one in flames, and driving off the rest.

It was following this heavy attack on *Shoho* that Commander Robert Dixon of *Lexington* made his famous quip: "Scratch one flat-top! Dixon to carrier. Scratch one flat-top!" It was the first attack by American carrier aircraft on an enemy carrier. All but three of the attacking planes were back aboard by 1:38 P.M.

No vessel could have survived such a concentrated attack. After the first two direct hits, she burst into flames and stalled dead in the water. More bombs and torpedoes were delivered, and after the abandon-ship order at 11:31 A.M., she sank within five minutes.

Both *Yorktown* and *Lexington* were ready to launch again by 2:50, but Admiral Fletcher decided that the sunken carrier's escort force was not worth the risk. Also he had not as yet learned where Admiral Takagi's big carriers, *Shokaku* and *Zuikaku*, were, although from the monitoring of enemy radio messages, he was positive Takagi knew where he was. The weather began to deteriorate, and to start a new search for the enemy carriers did not seem reasonable, since if they were found, it was too late in the day to hope for a daylight recovery.

Leaving further search to shore-based aircraft of greater range, Admiral Fletcher continued to steam west during the night of May 7-8, hoping to intercept the Port Moresby invasion group on his side of the Jomard Passage. He could not know, of course, that Admiral Inouye had recalled them. But Admiral Takagi was not as timid as Admiral Inouye, and by 4:30 P.M. he had launched twelve bombers and fifteen torpedo planes from *Shokaku* and *Zuikaku* with orders to search for Admiral Fletcher's force and to make an attack at sundown, if it was located. They had bad luck, owing to malevolent weather and found nothing, but were intercepted instead by fighters from the two American carriers. When that fracas was over nine Japanese bombers had been shot down, with a loss of two Navy Wildcats.

Then a pathetic situation resulted from this intercept. The Japs that escaped this intrusion were completely bewildered and laid a course for home directly over the American carriers that they had been searching for. Just after sunset three were off *Yorktown's* beam appealing for help in Morse with Aldis lamps. *Yorktown* signalmen blinked back, not certain who was making the appeal. When the Japs moved to enter the U. S. Navy landing circle they were treated most inhospitably and one was shot down. Then Admiral Hara of the Japanese Carrier Division 5 had to turn on his searchlights so that his planes could find their way back, and in the ensuing night recovery, eleven more planes went into the sea. Seven more were not recovered until 9 P.M.

All this alerted the U. S. forces to the fact that the enemy force was only thirty miles away. Radar aboard *Lexington* indicated a landing circle that close, and Admiral Fitch tried to advise Admiral Fletcher aboard *Yorktown*, but once more a communications foul-up kept the advice from the commander until eleven o'clock that night. At first Admiral Fletcher put little stock in the report, saying that *Yorktown's* radar disclosed no such intelligence, and conceded that if the radar were correct, the Japanese carriers would be miles away by midnight. Admiral Fletcher had considered detaching a cruiser-destroyer force for a night attack on Admiral Takagi, but because of meteorological conditions thought better of it.

At 10 P.M. that night the enemy carriers were actually ninety-five miles to the eastward, and Admiral Fletcher decided to keep his force concentrated and prepare for a daylight battle the next morning. By that time both forces were 170 miles apart. The Japanese had the better of the deal, for they had moved under a front of low clouds and a long belt of inclement weather. *Yorktown* and *Lexington*, with their consorts, were in full view beneath a clear sunny sky.

On or about 9 A.M. of May 8 both forces launched their attack squadrons. Earlier, scouts from both sides had located their enemy and the Battle of the Coral Sea was joined. There were eighty-two planes from American decks and about seventy that flaunted the insignie of Japan. Only a few hours of life were left for many of these air crews to enjoy, for a great victory was to be won—which side would triumph no one knew, and history is still not certain.

The attacking planes passed each other without making contact, and both groups were over their targets by 11 A.M. *Yorktown* launched forty-one planes—twenty-four bombers, nine torpedo bombers, and



eight fighters. *Lexington* put out twenty-two bombers, twelve torpedo bombers, and nine fighters.

All *Yorktown* aircraft were in position by 10:57, and the pilots could see *Zuikaku* and *Shokaku*, each escorted by two heavy cruisers and several destroyers, steaming southwesterly about eight miles apart. They saw *Shokaku* turn into the wind to launch an air combat patrol, but *Zuikaku* and her consorts darted to the cover of a rain squall. *Yorktown*'s Torpedo Squadron 5, led by Lieutenant Commander Joe Taylor, went for the flat-top in the open; the first American attack of the war against a large Japanese carrier.

Whether the torpedo boys had a touch of stage fright, or plain buck fever, is by now uncertain, but the attack left much to be desired. The torpedoes either went astray or failed to explode, and only two bomb hits were registered, although the *Yorktown* pilots claimed six bomb and three torpedo hits. The two bomb hits ignited gasoline well forward on *Shokaku* and the flight deck was so damaged that although she could recover aircraft, none could be launched. One of the bombs pierced the deck and exploded in an aircraft-engine repair shop.

The *Lexington* formations ran into hard luck. Taking off ten minutes after the *Yorktown* force was airborne, they first lost their Wildcat escort in a cloudy level, and their torpedo squadron went to an area incorrectly designated, so they put on a box-search until they found the enemy. In the meantime their dive bombers flew into a thick overcast, never did locate the Japanese force, and had to return when their fuel was low. The rest of *Lexington*'s air-striking force, by now composed only of eleven torpedo bombers, four dive bombers, and six Wildcats, caught up with the enemy at 11:40. The torpedo attack was made through a small hole in the cloud layer, and the approach had to be made in a spiraling glide. Once the torpedo boys were out of the way, the dive bombers went hurtling through the same small opening. During all this the Zekes turned on the Wildcats and shot down three of them, and this diversion allowed the bombers to make their attacks unmolested.

But unmolested or not, the attack added little to what small measure of success the *Yorktown* fliers had had. The torpedoes were released at too long a range, and moved so slowly, the Japanese helmsman had no difficulty in avoiding them. The dive bombers managed just one hit on *Shokaku*, which by then was reported to be burning furiously and sinking fast. This was something of an exaggeration, for the Japanese carrier, although she had lost 148 men killed or wounded, was

not yet holed below the waterline. All fires were doused finally, many of her aircraft ordered to land on *Zuikaku*, and by one o'clock she was steaming for Japan. It was touch and go all the way, and once she nearly capsized, but she got there and lived to fight another day.

The scene now shifts to the other side of the conflict where a strange situation greeted the returning American aircraft—in all probability some of the air crews must have wondered whether they had been flying in circles and had returned to the Japanese fleet. They found both *Yorktown* and *Lexington* had been hit. The seventy-odd planes from *Shokaku* and *Zuikaku* had been giving the American carriers much the same treatment that their own were suffering from the U. S. Navy fliers. In this weird transverse conflict, luck brought a broader measure of success to the Japanese, chiefly because their planes were sent direct to the targets, and their strike groups were better balanced in composition.

Admiral Fitch, who had charge of the tactical program, realized that once his aircraft had been launched and sent on their way, retaliation would come swift and sharp. Correctly, everyone guessed that the enemy attack would open about 11 A.M., and once the main strike planes were launched, a Wildcat patrol was put up to protect the carriers. *Lexington's* radar picked up the Japs at 10:55, but the protective fighters were not well directed, and one patrol had just landed and a second was in the air with very little fuel. They had to stay close to their flight decks instead of ranging out to stop the enemy bombers before they could form up for their attacks.

The two carriers that had been steaming northwest, changed course, went to twenty-five and then thirty knots and launched relief Wildcats as fast as they could be refueled. Five were actually available to stop an enemy many times that number; two stayed low hoping to harass the torpedo bombers, but the Zekes did some harrying of their own. Four more F4Fs were vectored out to an anticipated interception point, found no enemy aircraft and returned to their carrier with not much to show for their effort. A few Dauntless dive bombers attempted to take on the role of fighters, but were much too slow for the task and four of them were shot down, although they were said to have disposed of as many enemy torpedo bombers. What defense was put up, came from antiaircraft batteries on U. S. Navy ships.

The full force of the attack broke at 11:18 when the enemy approached from the northeast, down wind, and down sun, and made the most of the perfect visibility. Torpedo bombers aimed for both

port and starboard bows of *Lexington*, launching their missiles from well over a half mile away. Captain Frederick C. Sherman tried to maneuver so as to steam parallel with the "tin fish" but *Lexington* was not designed for such delicate executions, taking between fifteen hundred and two thousand yards to make a tactical turn. There were just too many torpedoes. They came in from every angle, porpoising and diving. The first smacked home at 11:20 and the whole ship staggered with the impact, the next bored into the port bow and sent up a gusher of flame on which was poised a great block of greenish-white sea water. As the men on deck stood immobile watching this fantastic display, a lookout forward screamed: "Dive bombers!"

Out of the sun, sparkling and screeching, the first dive bomber began to flatten out. Every eye followed its long black missile for an instant, and then there was a terrific smash and explosion on the port forward gun-gallery as three five-inch weapons were ripped from their mounts and tossed aside like jackstraws. The Marine gun teams were never seen again. Aghast and stunned, the deck watchers saw a second formation of torpedo planes screaming toward them, dropping their evil weapons at two hundred feet altitude. When they were one thousand yards away machine-gun fire was sent against them, but the torpedo bombers replied in kind, and the men who were spotted here and there were knocked down and twisted into heaps by these hissing hornets. As the wounded staggered or crawled away almost unnoticed by their shipmates, great columns of water climbed into the sky all around *Lexington* from the blasts of near misses.

Another torpedo struck home on the port side amidships, and more were carving foamy wakes and pointing glinting fingers of disaster. Two were seen coming dead on, skipping and diving wildly, but everyone braced for the shock. This time no explosion resulted as the two "tin fish" went streaking into nowhere, and the knowledgeable ones knew that the torpedoes had gone out of control and dived clean under the carrier. For those men who could give it time, this seemed a lucky break. Then a light bomb pinged off the smoke-plumed funnel, ricocheted with a spatter of sparks and dropped to a catwalk, killing and wounding several sailors. Noise, confusion, smoke, flame, and incredible brackets of silence rendered the survivors stiff with fear. No one moved until another Japanese plane dropped a bomb that plunged through the space between the funnel and the control island. In its course it bent a metal tube through which ran a cable that operated the ship's bull horn; the cable was tightened, and a bellow and moan,

like the cry of a stricken whale, continued as Japanese fighters swished back and forth, wiping off everything with their machine guns.

Captain Sherman kept *Lexington* wriggling and squirming, still attempting to evade some of the onslaught. Five planes were burning on the water, and a gigantic waterspout rose into the sky near *Yorktown*. Everyone aboard *Lexington* believed that she too had been hit, but it was a near miss. Japanese aircraft were diving or deck-strafting. Now and then a lone Wildcat was seen to be following, but usually pursuer and pursued disappeared in a column of smoke and no one knew what happened. Dive bombers came down from all angles, seven more torpedo planes roared in from the port side, but the gunnery from the ships' batteries was so hot that most of the "fish" were released at ridiculous angles and distances.

A lookout yelled that a Navy airman was floating on a life raft out in the pattern of torpedo streaks. When he was finally spotted he was seen to be kneeling in his raft, waving his arms like a cheerleader. Captain Sherman ordered a destroyer to pick him up, and in a few minutes he was hauled aboard on a line like a hooked salmon—there was no time for formality.

At this point the executive officer, Commander M. T. Seligman was handed a message by a ramrod-backed Marine—it may be apocryphal, but worth relating. Commander Seligman is said to have taken his eyes off the swarms of attackers and scanned the message. He crumpled the paper impatiently and growled: "A fine time to annoy me with a thing like this!"

"What's the trouble, Commander?"

"It seems we have a case of measles in the sick bay!"

By 11:32 the last of the dive bombers had made its pass. It was a near miss, but close enough. The attack was over and *Lexington* was still afloat, steering normally, and the engines were turning over. There was a slight list to port, and some oil was being lost astern, and reports of serious fires continued to come from below. More than 103 passes had been made at the carrier in sixteen minutes, and the antiaircraft gunners had downed at least nineteen enemy planes.

*Yorktown* also did not escape unscathed. The first three of eight torpedoes sent at her were delivered at 11:18. Her skipper put on extra knots and maneuvers to avoid. Fortunately she had a smaller turning circle than *Lexington* and in this case the Japanese did not attack her port and starboard bows. No hits were scored, but at 11:24 a pack of dive bombers came in and attacked for more than three minutes, but

only one bomb, an 800-pounder, caught her flight deck some fifteen feet inboard of the island, went on through all the way to the fourth deck where it exploded, killing or wounding sixty-six men. Fires were started, but damage control was excellent. It has since been explained that the skillful handling by Captain Elliott Buckmaster enabled *Yorktown* to escape with damage that did not interrupt her flight operations.

The battle itself closed down at 11:45, and up to this point the U. S. Navy held the edge; they had sunk the light carrier *Shoho*, damaged *Shokaku* so that she was out of action for months, and sent one destroyer and several minelayers to the bottom. We lost one destroyer, an oiler, and had two large carriers damaged; the net result was not known until later.

With her list, three boiler rooms partially flooded, her aircraft elevators inoperative, and three fires still burning, *Lexington* struggled to some semblance of serviceability. The crew soon put the flight deck back in operation, planes were recovered, and she was brought to an even keel by the shifting of oil ballast. Throughout TF 17 everyone believed "Lady Lex" would survive, make a hospitable port, and sail to fight again. The damage control officer, Lieutenant Commander Howard R. Healy, reported: "We have the torpedo damage shored up temporarily, the fires are out, and she's back on even keel," and added facetiously, "but I suggest, sir, that if you must take more torpedoes, please take them on the starboard side."

The first "tin fish" had caught the torpedo bulges up toward the port bow. These bulges are false hulls built along the sides of the ship below the waterline. They form a protective blister and sometimes are filled with water, and in some instances are stiffened with light noninflammable packing. They provide a light wall that is intended to baffle the full effect of torpedoes or mines, and without such defense, a torpedo could blast a hole fifteen feet in diameter in the main hull.

*Lexington* also had about six hundred compartments that could be closed off with watertight doors and hatches, and when the main hull was pierced, compartments in that area could be shut off and the surrounding bulkheads shored up, so that in effect, the bulkheads and doors became the ship's side until more permanent repairs could be made. How well all these damage-control measures were carried out will be noted when it is explained that most of her aircraft were eventually recovered, and there was no decrease in her cruising speed; she

was holding her station and doing twenty-five knots with the rest of the fleet. Within an hour after the final torpedo had struck, Chief Engineer, Commander Heine Junkers, had all sixteen boilers available. The ship was well squared away, and the fleet was steaming northward, hoping to close for another attack that afternoon.

The first hint of trouble came at 12:45 P.M. when a dull, rumbling explosion was heard. Those on the bridge, or working on the deck scarcely heard the low thud. To the men working several decks below, it sounded like a "sleeper" bomb, one that had hit, penetrated a few decks, and then had detonated with delayed action. A fire-fighting group, wearing oxygen masks and carrying portable extinguishers, moved in, but owing to fumes and heavy smoke could not tell what had caused the explosion. Twenty minutes later a second mystery detonation resounded through the carrier, and more fire and smoke ensued. It was realized now that both explosions had occurred near damage-control's Central Station, Commander Healy's office. The second blast killed this gallant officer and a number of his men who were working in that area.

*Lexington* suffered more casualties over the next five hours than she had in all the action against the Japanese sky raiders. Gasoline vapors, released by one of the torpedo hits, were being ignited by a motor generator that had been left running, and these eruptions continued on a hellish schedule. The damage-control crews fought on with dogged determination and unbelievable courage; men were blown to bits, some were seared to a crisp, others were smashed against steel bulkheads. No one knew it then but *Lexington* was doomed. They fought on and on against the unpredictable odds. Crews choked and vomited, but crawled forward to fight the damnable fires, never knowing when the flames would reach and detonate main ammunition stores. The crews were not all seasoned seamen; some six hundred of them were on their first cruise, and most of them had not seen the sea until they had shipped out on "Lady Lex."

Each new, and heavier, blast tore metal watertight doors from their hinges, massive steel hatches were twisted like cracker box tops, and what shoring had been done in the torpedoed areas was ripped away. A few lights remained on here and there, but the corridors and companionways were so dense with smoke that electric illumination was of no use. Men could not see to fight the damage or haul out their wounded comrades. It was an inferno set in a blackened crypt. When certain airtight compartments were punched open, air swirled out and

added to the combustion of the fires, and there were no other doors or bulkheads to block off this damage.

The flames licked up, ate away the conduits carrying the main power lines, and all machinery stopped. Where hose and water were available, there were no pumps. If by good fortune one area was isolated, another explosion erupted and undid all the work, or created greater problems. When it was realized how these explosions were being set off, damage-control officers discovered that the fuel storage tanks in a critical section could not be flooded. More explosions thundered along the Stygian corridors, further damaging storage-tank bulkheads, and allowing more seepage of gasoline and fuel oil. This mixture was evaporating in the heated air, and below-deck compartments were giant carburetors, producing a fiendish explosive vapor.

One explosion blew off the door of the ship's hospital, fractured Dr. White's ankle and severely injured his shoulder, but the doctor ignored his own hurts and for the next three hours carefully attended the more severely wounded. When dense smoke billowed into the sick bay the patients were moved amidships to the captain's quarters, and when the fires began to spread two hours later, they were moved out to the flight deck and finally taken aboard stand-by destroyers.

By 1:30 P.M. fires had eaten away the power-steering cables and gear, and it was necessary to resort to an emergency wheel that was located in a blind area of the ship. In order to keep contact with this auxiliary post, a human chain was formed that stretched 450 feet from the bridge to the emergency steering station four decks below, and steering orders were passed by word of mouth. This was continued until *Lexington* was finally yawing dangerously, and the whole task force had to disperse until either safety control was obtained, or the carrier was abandoned.

At 4:30 that afternoon, with practically all communications severed, and the engine rooms unbearable, it was decided that they were fighting a losing battle. All hands prepared to abandon ship, rafts were cast loose, lines lowered to trail in the water, and a final search made throughout the ship for the wounded who could not help themselves. Blood plasma was administered, injections given to relieve pain, tannic acid dressings bound on, and wounds dressed. Finally 150 men in basket stretchers were lowered into whaleboats, and the order to abandon ship was given. Captain Sherman, holding Wags, his ten-year-old cocker spaniel, was the last to leave the ship. Personal valuables were stowed in shirts and one group of seamen took time to haul up several

gallon cartons of ice cream from the galley. They thoughtfully brought handfuls of wooden spoons that added a picnic air to the occasion. The sea was calm and warm, and no one who went overboard during the abandon ship routine was lost.

At 8 P.M. "Lady Lex" was pierced by torpedoes from the destroyer U.S.S. *Phelps*, and with one final explosion she went down, bows up, and slid into 2400 fathoms with the bodies of 216 men and what was left of 36 aircraft—19 aircraft had been flown off and landed on *Yorktown*. Thankfully, 2735 officers and men were rescued.

As a gesture of caution Admiral Inouye decided to call off the invasion of Port Moresby, although what force might have stopped him by now, is uncertain—except that the land-based Army Air Force had been well alerted and might have mopped up the Japanese transports now that *Shoho* had been sunk, and no air cover could be furnished for the invasion group.

The news of the Coral Sea battle was greatly exaggerated back home. Some newspapers said that between seventeen and twenty-two Japanese vessels had been sunk, but no mention of the loss of *Lexington* was released. In Tokyo the Japanese reported the sinking of battleships that had not as yet been launched, all of Admiral Crace's force was said to be wallowing on the bottom of the Pacific, and both *Lexington* and *Yorktown* completely destroyed. Since American authorities neither denied nor confirmed these wild claims, the Japanese Navy had no idea what had happened, but were amazed to learn years afterward that, although damaged severely by one large bomb, *Yorktown* was repaired so rapidly, she was available for the Battle of Midway a short time later, whereas neither *Shokaku* nor *Zuikaku* were able to take part. The former was badly damaged and Japanese shipyards could not compete with the time allowance; as for *Zuikaku*, she lost so many airmen and aircraft she was not ready for action again until she was sent out for the diversionary raid against the Aleutians June 12.

This first carrier-against-carrier battle was historic since all losses were inflicted by air attack—no ship on either side sighted a surface vessel—but whether the Battle of the Coral Sea opened a new chapter in naval warfare was not clear. Many mistakes were made by both sides, communications were haphazard and at times tragic. Port Moresby had been saved, which meant that the whole Australian continent was safe; the Louisiades was the limit to which ships of the Japanese Empire would reach. But more important, the factors that were to make up both sides in the Battle of Midway were determined,



and in the end success there possibly was the most important victory in the whole Pacific campaign.

If the designers of carrier aircraft did not learn something from the tragic loss of *Lexington*, that conflict was a defeat for us. Also, we must have been convinced that the enemy Zeke fighter was superior to the Wildcat in speed, maneuverability, and rate of climb. Immediate plans for new tactics against these Meat Ball gadflies had to be considered. The TBD was most vulnerable in that it did not have leakproof tanks (self-sealing), and was much too slow for routine torpedo bombing. We should have learned a lot in the Coral Sea.

Geographically, the Midway Islands make up a circular atoll in the mid-Pacific Ocean, about six miles in diameter. They were little known until 1903 when a small force of U. S. Marines took them over, chiefly to guard a trans-Pacific cable station built there. The two main islands, Sand and Eastern, were first claimed by the United States in 1859, and ten years later \$50,000 was appropriated to dredge a channel into the lagoon, an operation that was discontinued after seven months of effort and expense.

From early 1900 it was noticed that Japanese poachers were swarming over these islands capturing tern, black gannet, and goonie birds for their feathers. Fearing that these invaders might become international squatters, President Theodore Roosevelt put the islands under the jurisdiction of the U. S. Navy, and the poachers were ordered off. Robert Louis Stevenson, one of the first to publicize the Pacific islands, is said to have based his tale, "The Wrecker," on the experience of the crew of a British bark, *Wandering Minstrel*, that sank in the Midway lagoon during a storm. Her Captain Walker, his wife, and members of his crew subsisted on fish and birds' eggs until they were rescued.

Pan American Airways established an air service to the Philippines in 1936, using Midway, Wake, and Guam as refueling stations. An inn was built at Midway for overnight accommodation, and by 1940 the base was considered to be an important military outpost, particularly when the civilian population rose to 437. Midway's strategic importance first became evident in 1935 when the U. S. Navy held fleet maneuvers around the sandy atoll in which the Marines made practice landings, and aircraft flew simulated attacks against the dunes. By 1939 the Hepburn Board Report described Midway as second in importance to Pearl Harbor, and suggested that facilities for two patrol

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squadrons be constructed, and some channel piers built. Late in 1940 a Navy dock was added, and gradually a respectable defense force was formed that included consideration of an airstrip on Eastern Island to supplement the seaplane facilities, originally planned.

When the war began the Sand Island seaplane ramps accommodated twelve PBY flying boats, belonging to VP-21 Squadron. Two Dutch PBY flying boats that had taken off that fateful morning for the East Indies were recalled and commandeered. There were no actual fighting aircraft on hand, but three days before the Pearl Harbor attack, U.S.S. *Wright*, a seaplane tender, had delivered forty enlisted men from Marine Air Group 21, who were to receive and service eighteen Curtiss Helldivers that were to be flown off *Lexington* on December 7. As related before, *Lexington* did not deliver the aircraft, since she was ordered to turn back, and the dive bombers were handed over to the Pearl Harbor defense forces for the time being. On December 17 these single-engined planes, guided by a twin-engined PBY, flew from Hawaii to Midway, after a record-breaking flight of nine hours and forty-five minutes, the longest mass overwater flight of its kind on record up to that time.

On the night of December 7 two Japanese destroyers *Sazanami* and *Usio* lobbed a few shells into Sand Island that killed two Marines and two sailors. The roof of the seaplane hangar was burned, one plane was completely destroyed, as were most of the hangar's stores. The island's two defense batteries returned the fire and claimed some hits, that were never substantiated, although Captain J. H. Hamilton who was flying a P.A.A. Philippine Clipper out of Wake Island had reached a point southwest of Midway, and reported noting two naval vessels bearing southwest, and that one of them was burning intensely.

By Christmas Day *Saratoga* delivered fourteen Brewster Buffaloes, belonging to Marine Fighter-221 Squadron. These almost obsolete aircraft were to reinforce the ancient PBY patrol planes. This haphazard build-up continued during the spring of 1942, and although Midway was obviously the key point in the over-all war plans in the Pacific, very little was, or could be, done about it.

However, as the picture became clearer and the importance of Midway fully revealed, the necessary defensive plans were extended. At the same time U. S. Intelligence had broken a valuable Japanese code and learned of Admiral Yamamoto's intent to take either Hawaii or Midway. By early April twenty-two Marine pilots, seven Wildcat aircraft, and nineteen Helldivers were delivered by U.S.S. *Kitty Hawk*.

By the end of May the airfield, spread over one end of Eastern Island, was cluttered with four B-26s and seventeen B-17s, belonging to the Army Air Force, six Navy torpedo carriers, and about sixty planes of varying categories belonging to the U. S. Marines.

Fuel consumption for continued training and routine patrols was gobbling up 65,000 gallons of aviation fuel per day, and on May 22 this situation became critical when a sailor yanked the wrong switch during a demolition drill and burned up 400,000 gallons of gasoline. From that time on all aircraft were refueled from fifty-five-gallon drums, which was similar to servicing a Cadillac with an eyedropper.

Even after the setback in the Coral Sea engagement, the Japanese Combined Fleet Headquarters continued its interest in the occupation of Midway. Although two of their large carriers had been eliminated from their Carrier Division 5, they believed the U. S. Navy had also lost two carriers, and so the available strength appeared to be well in Japan's favor. Admiral Nagumo still had *Akagi*, *Kaga*, *Soryu*, and *Kiryu* to provide his air striking force, and even the Naval General Staff at home, which had opposed the Midway attack, was now confident of a successful outcome. They knew that *Enterprise* and *Hornet* were back at Pearl Harbor; they had no idea where *Wasp* might be, but agreed she might join any defense of Midway. *Ranger* was believed to be in the Atlantic, and *Saratoga* was known to be still at San Diego undergoing repairs from torpedo damage. As matters stood on May 28, Japan had the better of the deal when Task Force 16, now under Rear Admiral Raymond A. Spruance, sortied out of Pearl Harbor.

On that same day Admiral Yamamoto sent off what might be considered a diversionary force that headed for an unimpeded invasion of the Aleutians. This was after a week of intensive fleet maneuvers and tabletop lectures aboard his flagship *Yamato*. The Japanese plan consisted of three general operations. Rear Admiral Kakuji Kakuta, with the Second Carrier Striking Force took over the Aleutians assignment; his flagship was *Ryujo*. About May 26 (Tokyo time) he moved out of Ominato harbor on northern Honshu, steamed through the Tsugaru Strait and set an easterly course across the northern Pacific. A friendly fog came up and gave him full cover from any U. S. submarines that might have been lurking east of Hokkaido, and, as we know, the Kakuta force met no opposition and made the landing unhindered.

On the morning of May 27 (Tokyo time) the Admiral Nagumo force departed from Hashirajima anchorage, threaded its way through

Bungo Strait about noon and by nightfall was well out in the Pacific. Meanwhile other forces were moving out according to plan. Vice-Admiral Hosogaya's northern main body, and the Attu and Kiska invasion forces sailed out of Ominato. To the south the Midway landing forces, escorted by Rear Admiral R. Tanaka's light cruiser flagship *Jintsu*, twelve destroyers, the seaplane carrier *Chitose*, tenders and other units ranged out of Saipan that same evening. A trick that was designed to deceive U. S. submarines on patrol, took the convoy first in a westerly direction, and then it skirted around to the south of Tinian before heading east. Rear Admiral Kurita's support group of heavy cruisers steamed out of Guam almost simultaneously and moved on a parallel course, about forty miles to the south of the invasion convoy.

The last to move out were the main body of the Midway Invasion Force, under Vice-Admiral Kondo, and the Main Force under the direct command of Admiral Yamamoto. Five months had passed since the battleship group had last left home waters as it had remained in the Inland Sea, carrying out rigorous training for what was hoped would be a major role in a decisive battle against the American Fleet. Every officer and man aboard the big ships was confident their firepower would send every enemy to the bottom, and now that they had *Yamato*, the largest battleship afloat, making her maiden sortie, their confidence was to some extent justified.

As this main force moved to head out of Bungo Strait, patrolling destroyers reported sighting two enemy submarines. This information, added to earlier radio intelligence that indicated there might be a total of six enemy submarines in this area, intensified antisubmarine operations and search, and as a result all ships of the Kondo and Yamamoto forces slipped through this danger area without mishap.

On reaching the open sea, Admiral Yamamoto's force went into two parallel columns of battlewagons, while the light carrier *Hosho* took a position between the two columns where she could launch or recover her antisubmarine planes in shelter and protection. The whole battleship group was screened by twenty destroyers, and the light cruiser *Sendai* completed a circular defense force, moving southeast at eighteen knots.

By May 29, their time, all the Japanese forces were forging ahead without a hitch. Only Admiral Kakuta, heading for his Aleutian engagement, was plagued with continued bad fog. On May 30 rain and strong winds over the central Pacific made navigation difficult for the

Yamamoto and Kondo forces, and the formation speed was cut to fourteen knots. To add to this a message was picked up from a U. S. submarine somewhere directly ahead of the Japanese Transport Group. Although the message was in code, it was meant for Midway, and Admiral Yamamoto presumed rightfully that the invasion transports had been spotted. His staff should have been concerned, but instead it took the attitude that if United States forces had guessed the purpose of the transport group, they would send out a fleet to oppose the invasion, and the primary objective of drawing in these enemy forces for a decisive battle would be achieved.

From this point on many of Yamamoto's well-laid plans went awry. Two submarines that were ordered to refuel two flying boats off French Frigate Shoals about five hundred miles northwest of Oahu, found, instead, two U. S. Navy seaplane tenders at the rendezvous, and the contact had to be called off. The Japanese flying boats were to have made an important reconnaissance over Hawaii, and when this plan had to be discarded, it was impossible to know just what U. S. Navy forces were still in, or had left Pearl Harbor. Now Admiral Yamamoto was relying on information from cordons of submarines that skulked between Hawaii and Midway, and this information would have to be available by June 2 to be of any value. The weather was still disturbing by June 1 and the Yamamoto force was unable to find its tanker train to refuel. Aircraft were sent up from *Hosho*, but they could not round up the oilers, and radio messages had to be sent out before this important contact could be made.

With this breaking of radio silence, there came further evidence that the U. S. forces were cognizant of Yamamoto's intentions. Radio messages between Hawaii and Midway were stepped up in number and urgency. A Japanese flying boat encountered an American flying boat about five hundred miles north-northwest of Wotje that indicated that Midway had extended its patrol range to seven hundred miles. News of contacts with U. S. submarines continued to seep in which, when analyzed, indicated that an enemy submarine patrol line was out some six hundred miles southwest of Midway.

Thousands of airmen and sailors had a rendezvous with death.

The carrier *Hornet* left Pearl Harbor May 28, and her air group that had been stationed ashore while she was in port, flew out and went aboard shortly after the carrier was clear of the harbor. Within min-

utes of tying down the planes, her skipper, Captain Marc A. Mitscher, went on the bull horn to explain the situation.

"This is the captain. We are going to intercept a Jap attack on Midway."

The idea of an assault on Midway had been brewing in the minds of the airmen for some time and few of them were particularly disturbed; only the skipper of Torpedo Eight Squadron felt any concern, for six of his new Grumman Avengers were based on Midway, and he wished he had a full deck to deal from. Most of the airmen aboard *Hornet* had been in special training for months, but none had actually fired a shot in wrath. As the carrier steamed on for a rendezvous with Rear Admiral Frank J. Fletcher's Task Force 17, routine training was continued.

On June 1 Captain Mitscher scrawled a message for Commander Henderson to read out: "The enemy are approaching for an attempt to seize Midway. This attack will probably be accompanied by a feint at western Alaska. We are going to prevent them from taking Midway, if possible. Be ready and keep on the alert. Let's get a few more yellowtails."

By 2 P.M. the next day *Hornet's* force joined *Yorktown* northeast of Midway, and Admiral Fletcher assumed tactical command of the entire American defensive force, but Admiral Chester W. Nimitz, back at Pearl Harbor, still maintained command of the strategic planning. Admiral Halsey was indisposed, and Rear Admiral Raymond Spruance was given command of Task Force 16, of which *Hornet* was a part.

As has been noted, the Pacific Fleet could not put one battleship into the Midway action. Vice-Admiral William S. Pye's battleship force, which had been carrying out important duties over routes between West Coast ports and Hawaii, was anchored in San Francisco Bay where the battleship sailors on liberty were treated unpleasantly by San Franciscans. Admiral Pye wished to get into more dramatic action, but Admiral Nimitz refused, explaining that he could furnish the slower battleships no air cover, and that the Midway planning promised small opportunity for battleships to tangle with the enemy.

Admiral Nimitz had, therefore, to face a Japanese force that was composed of battleships, carriers, heavy cruisers, and a full complement of support vessels, with a much smaller collection. He also had had to decide whether to confine his efforts to the Midway situation, leaving the Aleutians to fend for themselves, or to make some token



effort to protect those far-flung islands. The "token" effort had been decided on early in May when a North Pacific Force, composed of the heavy cruisers *Indianapolis* and *Louisville*, the light cruisers *Honolulu*, *St. Louis*, and *Nashville*, and ten destroyers, was put under command of Rear Admiral Robert A. Theobald.

Admiral Nimitz did have one strategic advantage over Admiral Yamamoto—a shorter distance from his base to the scene of the action. Midway accommodated more aircraft than any carrier, and Midway could not be sunk. Nimitz also had the benefit of the search radar, established on Midway, and by now *Enterprise*, *Hornet*, and *Yorktown*, as well as a few cruisers, were so equipped.

After careful consideration of available information, Admiral Nimitz believed that the Japanese would make a full-scale attack on Midway with the idea of an immediate occupation, that Yamamoto's battleships and carrier aircraft would aim to destroy as much of the U. S. surface force as possible, and enemy submarines would attempt to intercept and destroy any American vessels that were two hundred miles west of Oahu.

In opposition, Spruance and Fletcher were to inflict maximum damage on the enemy by using strong attrition tactics. In landlubber language this meant that planes from U. S. carriers were to torpedo, bomb, or dive-bomb anything that flew the Japanese Imperial Navy ensign.

Admiral Nimitz explained further in his Letter of Instruction: "In carrying out the task assigned, you will be governed by the principle of calculated risk, which you shall interpret to mean the avoidance of exposure of your force to attack by superior enemy forces without good prospect of inflicting, as a result of such exposure, greater damage on the enemy."

Admiral Fletcher, who was senior to Admiral Spruance, became Officer in Tactical Command the minute their rendezvous was completed. Fletcher had no aviation staff, whereas Spruance had inherited Halsey's, and it was fortunate that Spruance made the most of what was practically an independent command during the important actions of June 4-6. Neither Navy man had any control over the aviation forces on Midway, over the submarines in the area, or over the North Pacific force off the Aleutians. The over-all commander was Admiral Nimitz at his Pearl Harbor headquarters.

By June 1 the Japanese transport convoy had reached a point about

one thousand miles west of Midway and was steaming on a northeast course at about 240 miles a day, and would thus enter the seven-hundred-mile patrol radius of American patrol planes out of Midway by June 3—two days before the date set for the preinvasion strike on the island by Admiral Nagumo's Number 1 Carrier Division. It appeared that the transport force was moving too fast for safety—a point to be remembered.

The inclement weather continued and occasional rain fell where Yamamoto's main body was making a delayed refueling; in fact the weather turned worse and the refueling had to be discontinued. It was also learned at this time that submarines of Squadron 5 that were supposed to be part of the cordon line set up northwest of Hawaii, had failed to take their assigned positions—overhaul delays had postponed their departure from home bases. This left Admiral Yamamoto wondering what was going on in the cordon area; only his I-168 that was scouting in the Midway area got a few scant messages through, and this submarine could offer little that Yamamoto did not know. The skipper of I-168 did report that many construction cranes appeared to be in operation on Midway, indicating that the installations were being expanded.

On June 2 Admiral Nagumo's carrier force was cruising about six hundred miles ahead of the main force where it entered a very misty area, clouds hung low, light rain began to fall, and it seemed that they would eventually run into a foggy condition. Visibility was so scant there was some danger of ships in the formation colliding, and at the same time Nagumo was very much in the dark about U. S. fleet movements; in fact the carrier force commander knew less of what was going on than did Admiral Yamamoto. He had a suspicion that the Americans were already alert, but without actual confirmation either way, his position was most unenviable. Admiral Yamamoto, holding to the order of radio silence, hoped that the element of surprise had not been lost, and thus put his trust in wishful thinking.

Actually, they were sailing into a trap, blind, but hopeful.

By dawn of June 3 the Japanese carrier force was creeping through a heavy blanket of fog and the ships steaming at six-hundred-yard intervals turned on powerful searchlights, but these artificial aids scarcely penetrated the pall. Navigating, and carrying out zigzag courses with only infrequent glimpses of neighboring ships, must have been nerve-racking and hazardous, yet these measures had to be maintained since the waters were patrolled by American submarines.

The fog did afford some measure of cover from aerial observation, but whatever advantage so gained was more than cancelled by the navigation and collision problems. They knew, too, that fog interfered in no way with U. S. Navy radar equipment.

Admiral Nagumo was a very unhappy man. With bad weather demanding a change of course by 10:30, he realized that he had been given two missions that were essentially incompatible. He was first to soften the Midway defenses by June 5 in preparation for the landing operations, a mission that limited his general movement, and at the same time he was expected to contact and destroy the U. S. Naval forces, an assignment that demanded complete freedom of movement.

Sitting out there in the fog wondering whether to use a low-frequency radio to advise ships when to change course, Admiral Nagumo had also to decide which assignment came first—the Midway beat-up, or the attack on American surface ships. His Captain Oishi made the following suggestion: "The Combined Fleet operation order gives first priority to the destruction of enemy forces. Co-operation with the landing operation is secondary, but the same order specifically calls for our air attack on Midway Island on June 5. This means that the air attack must be carried out exactly as scheduled, provided that no enemy task forces are located by the time we are ready to launch. If we do not neutralize the Midway-based air forces as planned, our landing operations two days later will be strongly opposed, and the entire invasion schedule will be upset."

Admiral Nagumo smiled at the simplicity of the advice. "That is all very well," he agreed, "but where is the enemy fleet?"

Captain Oishi presumed that the American forces were in Pearl Harbor, and if so they would have more than one thousand miles to sail, once they learned of the Japanese strike at Midway. On that premise Captain Oishi suggested that the scheduled raid on Midway should be carried out.

Still no radio intercepts were made to give them any idea where the U. S. Fleet was, or what were its intentions. And the Japanese force continued on, half-believing that the American Fleet would be lured out of Pearl Harbor with the news of the raid against Midway; they had no idea that a heavy force was awaiting them in the waters around the key island. Later on when Admiral Nagumo learned that the main fleet had had some such suspicion, he asked why the same radio intelligence had not been forwarded to him. The answer was that since he was closer to the enemy, he would naturally have picked

up the same information. Also, it was too risky to break their order of radio silence.

Rain fell steadily until June 4 (Tokyo time) and the sky was still sullen and forbidding. At 8 A.M. that morning Admiral Yamamoto sent his guard force off from the main body to proceed northeast to cover the Aleutian operations. A short time later he received a message from the admiral in command of the transport convoy that his ships had been spotted by an American search plane, some six hundred miles west of Midway. Even Admiral Yamamoto realized now that only a dullard commander would miss the threat against Midway, and it was obvious that some action would result shortly.

That afternoon nine B-17 bombers attacked the transport convoy, but no hits were scored. Early the next morning more American planes roared over and made a low-level attack; one of them put a torpedo into *Akebono Maru*, a tanker in the rear of the column. The explosion killed eleven men and wounded thirteen others, but the tanker ignored the rent in her hull, continued on, and maintained her place in the formation. This transport formation was supposed to move in well ahead of the carrier force, but Admiral Yamamoto was planning according to the phase of the moon, and this plan was adhered to.

Rear Admiral Kakuta's Second Carrier Striking Force which was leading the northern thrust, reached its launching position for the strike at Dutch Harbor. The mercury stood well down the thermometer tube. The pilots were using maps that were made from charts thirty years old, and no one had any idea what the shoreline portions of their target island would look like. The planes took off at 2:38 A.M. June 3 from *Ryujo* and the light carrier *Junyo* when the visibility had reached about three thousand yards.

This attack, which was intended as a diversionary thrust, was a risky venture. Weather made formation flying impossible, so eleven bombers, twelve dive bombers, and a dozen fighters headed for Dutch Harbor. Fortunately for them, they found a hole in the clouds and no American defense planes to hamper them. They attacked a radio station, oil tanks, and one flying boat that was moored in the water. While these planes were over Dutch Harbor, an American flying boat, with a small escort of scouts, flew over Admiral Kakuta's force and dropped several bombs, but scored no hits.

The opening Japanese attack left much to be desired, although some photographs were taken that showed modern warehouses, barracks,

wharves, good roads, and fuel-storage tanks. A second mission was sent out, but this time the weather closed in thick, and all planes had to return without dropping a bomb or firing a gun. Admiral Kakuta's force then continued to move in until it was about one hundred miles off the Aleutian shore. Two Japanese flying boats were sent on a reconnaissance mission, but were intercepted and shot down by American fighters. Two others, sent on a similar assignment, had not much better luck. They managed to return but the planes broke up when they landed near their mother ships.

These operations proved only that the United States had air bases in the Unalaska area, but where, Kakuta never found out. Little damage was inflicted on Dutch Harbor, and the foray was entirely ineffective in achieving its diversionary objective, since Pearl Harbor was aware that the main Japanese attack was to be directed at Midway.

Admiral Yamamoto's forces to the south were enduring many kinds of false alarms. Enemy (U. S.) planes were reported everywhere, but seldom confirmed. Lights in the night skies believed to be navigation lights of prowling aircraft generally turned out to be bright stars. As the zero hour approached, aircraft engines were run up, last-minute checks were made, and the carrier decks were hives of industry. By 3 A.M. June 4 (Tokyo time) aircraft were being readied for take-off from *Akagi*. Thirty-six torpedo aircraft, thirty-six dive bombers, and thirty-six fighters were picked up by the Midway radar when this force was forty-three miles northwest of the target point. When the island alarm sounded, a Marine fighter squadron took off and met the raiders about thirty miles out. Practically every Marine plane was shot down. The Zekes had a holiday and soon were over Midway, screaming through a wicked curtain of antiaircraft fire. The first bomb load was released from fourteen thousand feet. The Val dive bombers went in next, and together they wiped out the Marine command post and mess hall. They then went after the power station on Eastern Island, destroyed oil tanks on Sand Island, blew up the seaplane hangar, burned the hospital and storehouses and damaged the gasoline system. Luckily no real damage was inflicted on the runways and only a few service men were killed on the ground. This attack was over by 6:50 A.M. It was disclosed later that Marine Corps airmen had destroyed at least one third of the enemy attack group, before the Marines were shunted out of the play. Again the outdated Buffaloes and war-weary Wildcats were no match for first-class Zeke fighters.

An American PBY plane out of Midway had in the meantime,

despite the bad weather, spotted the Japanese force. The pilot took no chances and radioed in English: "Many enemy planes heading for Midway." A few minutes later he added: "Two carriers, and battleships bearing 320° distant 180 (miles from Midway) on course 135° speed 25."

This was the first real indication as to where the Japanese force was. The information was not exact, and the position was some forty miles off, but it was enough for Admirals Spruance and Fletcher. Admiral Spruance made a quick and valuable decision, ordering *Enterprise* and *Hornet* to proceed southwesterly and attack enemy carriers when definitely located, and promised to send *Yorktown* along as soon as she could recover the planes of a search mission she had in the air. It was Admiral Fletcher who made the decision about *Yorktown*, and in that resolve he ignited a train of events that was to result in the loss of four Japanese carriers.

A short time later, 7 A.M. to be exact, while Army B-17s were trying to punish enemy carriers from twenty thousand feet, but with no luck, fighter pilots from *Hornet* were put on alert and scout bombers were launched. One of these was Torpedo Eight, in which Ensign George H. Gay, Jr., was a member. He was to experience an amazing adventure in this battle.

About this time also a Japanese cruiser, *Tone*, had sent off a float search plane that was to reach a point some three hundred miles away. At 7:28 it reported a formation of ten ships, apparently enemy, that were headed southeast toward Midway. In its warning message it explained that this force was only two hundred forty miles from Midway, and doing twenty knots. When the news was relayed to Admiral Nagumo, his world toppled around him, for he had no idea that an enemy force could be that close so soon; that enemy surface ships were in the vicinity waiting to ambush him.

His staff intelligence officer soon figured out that the American forces were only two hundred miles away from Nagumo's carriers and that they were within striking distance of Japanese planes, but if the American commander had any carriers, Nagumo's fleet was within *his* reach! The *Tone's* search plane had not waited around long enough to learn whether there were any carriers in this unexpected force. At 7:58 A.M., apparently risking another peek, it reported that the enemy ships had changed course, but again failed to mention whether it included any carriers, and it was not until Nagumo's staff officers sent a radio signal demanding to know the composition of the enemy

force that finally at 8:09 A.M. the *Tone's* search plane's operator replied with: "Enemy ships are five cruisers and five destroyers."

That news pleased everyone until 8:20 when the *Tone* plane came through with: "Enemy force accompanied by what appears to be an aircraft carrier bringing up the rear."

The optimists aboard *Akagi* put their hopes in the phrase "appears to be." The identification was not certain. If the enemy had a carrier, why hadn't Nagumo's force been attacked by carrier-type aircraft? Then at 8:30 the search plane reported that two additional ships, apparently cruisers, had joined the enemy force. It was still on a course of 150° and making twenty knots.

Admiral Nagumo was in a new quandary. Most of his bomber planes aboard *Kaga* and *Akagi* had been armed with high-level bombs, weapons suitable for his attack against Midway, but if there were an enemy fleet somewhere ahead, torpedoes would be the order of the day. But he was still uncertain and vacillated. The only Japanese planes that were armed for an attack against enemy surface ships were thirty-six dive bombers aboard *Hiryu* and *Soryu*. To Nagumo's dilemma was added the problems involved in a dive-bomber attack against the mysterious enemy force—they would have to go without fighter escort since all his Zekes were in the air in a defense patrol against the repeated attacks by U. S. shore-based bombers. By the time his Midway-attack aircraft were returning, many in desperate straits, Admiral Nagumo had to make a quick decision.

The deck space was needed for the incoming planes, but some of his staff were suggesting an immediate attack against the force that *Tone's* spotter plane had reported. The Japanese admiral cautiously decided to clear his decks by putting his bombers below, and then bringing in the Midway-strike force. This decision was made around 8:30 A.M. He also removed the 800-kilogram bombs and replaced them with conventional torpedoes. Once his Midway force was safely aboard he decided that he would head northward to contact "and destroy" the enemy task force, and he advised Admiral Yamamoto of his decision, explaining that the enemy force was composed of one carrier, five cruisers, and five destroyers.

Admiral Nimitz's fleet actually consisted of three carriers, eight cruisers, fifteen destroyers, and at least twelve submarines, to which was added the land-based air arm of the Army at Midway.

The Japanese Midway-strike planes were recovered by 9:18 A.M., as well as the second wave of fighters that were up on combat air

patrol. The new northward course was set, mainly to evade the Midway-based air attacks, and with the hope of gaining an advantageous position over Spruance's fleet.

Admiral Spruance adopted the "commensurate risk" factor of his orders, and decided to launch his planes around 7 A.M., hoping to find the enemy carriers' refueling planes on deck in preparation for their second strike against Midway. He knew that his torpedo planes had a combat radius of only 175 miles, but this was a risk that had to be taken. At 7:02 aircraft began roaring off *Enterprise* and *Hornet*; every plane that could fly and carry a war load was put into the air. All told the force was made up of twenty Wildcat fighters, twenty-nine Devastator torpedo bombers, and sixty-seven Dauntless dive bombers, fairly well divided between the two carriers. A force of thirty-six Wildcats was held back as combat air patrol to cover the two flat-tops while the attack planes were away.

Admiral Fletcher, sailing the same course with *Yorktown* and Task Force 17, delayed his launching until after 8 A.M., presuming there might be other, unreported, Japanese carriers to contend with. Since nothing further had been added to any of the PBY reports, or from the Army Air Force bombers by 8:38, he launched half of his Dauntless planes and all of his torpedo carriers with suitable fighter escort. This force was in the air by 9:06, and another deckload was spotted for immediate take-off, if needed.

The enemy was located about 9:50, after it was realized that Yamamoto's force had changed course; instead of being on a heading for Midway, it was found at a point northwest. The four enemy carriers were boxed in by a screen that was composed of two battleships, three cruisers, and eleven destroyers. As the flagship, *Akagi* rode in a flank position to starboard, and *Kaga* steamed some distance astern. The Japanese carriers were in the condition Spruance had hoped—all bomber aircraft were aboard with rearming and refueling going on in great excitement.

Admiral Nagumo then ordered a new change of course, a 90-degree switch in direction to east-northeast. This evaded the dive bombers from *Hornet* that somehow missed the enemy, continued on their original bearing, and found nothing to attack. They had to land at Midway to refuel. Two piled up in the lagoon, and all the Wildcats of the fighter cover had to ditch owing to lack of fuel.

*Hornet's* torpedo squadron, under Lieutenant Commander John C.



Waldron, went on to some degree of glory and tragedy. Commander Waldron knew that his squadron had little chance to survive, but each man was determined to press on against all obstacles.

On discovering that the enemy was not where he was supposed to be, Commander Waldron turned northward while his fighter cover apparently headed in another direction. At 9:25 he spotted two smoke columns, and there found his targets. The Japanese air patrol pounced within minutes, and Torpedo Eight Squadron was immediately in trouble, and before they were within eight miles of the carrier force they were harried by antiaircraft fire. Commander Waldron pressed on, but plane after plane was shot down until there was only a small formation left. These continued on bravely and dropped their torpedoes, but they were batted down before they had any idea whether or not they had scored. Twenty-five-year-old Ensign George H. Gay, Jr., of Houston, Texas, alone survived of all the pilots and crewmen in the fifteen planes. He managed to launch his torpedo against a carrier, and pulled out about ten feet above the enemy deck. An explosive bullet took out his rudder controls, and his aircraft piled into the sea. His air gunner was dead, and Ensign Gay realized, after pancaking his ship on the waves, that he too had been hit in his upper left arm and left leg. The landing was rough and Gay's radioman could not climb out of the tangle of wreckage.

By 11:00 Gay was floating about with a black cushion and a bag containing his rubber life raft. He could have inflated the dinghy, but he had heard that Japanese fliers usually fired on men floating on the surface, and since he was well inside the Japanese Fleet area, he used the cushion as long as possible. He spent some time attending to his wounds, and then realized he was an eyewitness to what became known as the Battle of Midway.

As he floated about amid the naval carnage, he saw two enemy carriers hit squarely by American bombs. He saw tremendous fires and billows of smoke that burst through great holes in the decks. A pattern of wild flame churned upward to hold aloft great cushions of black smoke. He heard internal explosions roar from the carriers at momentary intervals, and as the attack continued one carrier showed fire from bow to stern.

A minute figure floating about amid the flotsam of battle, Ensign Gay was almost run down several times by destroyers that were speeding to the stricken carriers. A heavy cruiser steamed by less than five hundred yards from him, and Gay could see the crew along her rail

as they endured the gradual destruction of Admiral Yamamoto's force.

When the action waned in the afternoon the young ensign watched the Japanese make frantic efforts to control the damage. An enemy cruiser tried to stand by a crippled carrier, but could not move in close enough, so finally the cruiser stood off, opened up with her big guns and tried to scuttle the ill-fated flat-top. Some time later a destroyer came alongside the still floating hulk to take off survivors, as a covey of Japanese aircraft circled overhead, searching for a deck on which to land. Darkness finally ended the spectacle.

Ensign Gay then attempted to inflate his rubber raft, but he had first to repair a number of bullet holes in the envelope before he dared risk triggering the carbon dioxide bottle. When it was inflated, he clambered in and began a long night vigil. By sun-up the next day a Navy patrol plane spotted his yellow raft, swept down out of the sky and picked up the lone survivor of Torpedo Eight Squadron.

The torpedo squadron off *Enterprise*, commanded by Lieutenant Commander Eugene E. Lindsey, had no fighter protection either. His Wildcat escort inadvertently escorted Waldron's Torpedo Eight for a while. Commander Lindsey changed course well in time, and decided not to wait for the dive bombers. The Japanese helmsmen's clever maneuvering forced the TBDs to circle widely in order to make a beam attack on *Kaga*, which gave the Zeke fighters plenty of time—ten Devastators, including Lieutenant Commander Lindsey's, were shot down. The few who lived to launch their torpedoes did not score a hit.

When the last of *Enterprise's* torpedo bombers had cleared around 10 A.M., *Yorktown's* TBDs, commanded by Lieutenant Commander Lance E. Massey, took off, covered by Lieutenant Commander John S. Thach's six Wildcats. These fighters were soon shoved out of the play by a big formation of Zekes, and Commander Massey, emulating Waldron and Lindsey, went in courageously, hoping to get *Soryu*, but instead barged into another slaughter. Seven Devastators, including Massey's, went down in flames. Five managed to release their torpedoes before they were shot down, but no hits were recorded.

In the final summation, forty-one planes were sent out by American carriers, but only six returned and not one torpedo bored into a Japanese ship. What can be gleaned from this unhappy exhibition was the fact that the wild maneuvering of the enemy carriers prevented any of their aircraft from being launched, and although the TBDs were sitting ducks for the Zeke air cover, they did clear the air for the dive bombers

that appeared a few minutes later. This enabled the Dauntless planes to move in unhindered and drop their bombs on enemy flat-tops while deckloads of planes were being refueled.

There was little time to enjoy the glory of their victory over the American torpedo bombers, for the men of the Rising Sun were soon to see their last effulgence of sunshine. Dive bombers from all three American carriers, after expending some valuable fuel in searching for the Yamamoto force, were eventually guided into the right area.

In all probability it was Lieutenant Commander Clarence W. McCluskey of *Enterprise* who took his formation in first, guided by a radio-telephone appeal from Commander Miles R. Browning of Admiral Spruance's staff. McCluskey found all four enemy carriers still maneuvering within a circle eight miles in diameter. He had thirty-seven Dauntless dive bombers under his command, including his own, and he ordered Lieutenant Commander Wilmer E. Gallaher with VS-6 to follow him in attacking *Kaga*. Lieutenant Richard H. Best with nineteen SBDs following with 1000-pounders, instead of 500-pounders used by McCluskey and Gallaher, went in later and cleaned up what was left.

By a twist of fate a second element of three planes also attacked *Kaga*, giving that flat-top more than its share of TNT, and since the Japanese air cover patrols had dived low to get the torpedo planes, the dive bombers, roaring down a 70-degree chute, were not molested by the defending Zekes.

*Akagi* was refueling forty aircraft that were spotted about her deck when the barrage started. Thus, she had no sooner stopped evasive tactics to duck the torpedoes than three dive-bomb hits smacked home. Captain Aoki in a statement made later, complained, "It was impossible to evade torpedoes and dive bombers at the same time. The bombs were dropped from about fifteen hundred feet, and the first only missed our bridge by thirty feet. The second took out the amidships elevator, which was enough to finish us, the third ripped through the flight deck on the port side, aft."

This third bomb exploded in the middle of a group of airplanes that were being rearmed, or having the bombs that were intended for Midway changed to torpedoes to be used against the American task force. The bomb that hit near the elevator exploded in the hangar. It set off several Japanese torpedoes that started a terrific fire that was soon out of control. Admiral Nagumo, safe and sound on the upper

works of the bridge, decided matters were not too bad, but refused to go below to take a look. The ship's skipper, Captain Aoki, begged him either to abandon ship, or go below and look for himself. Nagumo lost his temper, although his staff officers tried to convince him that, as commander-in-chief, it was his duty at least to transfer to another ship where he could direct the operations since *Akagi's* communications were out and they could not take any command under these conditions.

Eventually Admiral Nagumo was practically dragged bodily down the wreckage-strewn companionways and ladders and finally finished the journey by a line that was hung from a lower portion of the island structure. Nagumo and his staff carried out the ritual of removing the Emperor's picture from *Akagi*, and were taken off by a destroyer and transferred to *Nagara*, a light cruiser, from where the admiral flew his flag during the remainder of the battle. During the transfer Nagumo was well aware that both *Soryu* and *Kaga* were in distress—fires were raging aboard both carriers—but he decided to carry on with the, as yet, undamaged *Hiryu*.

In the meantime Captain Aoki requested permission to have his ship sunk by gunfire, but both Nagumo and Yamamoto vacillated and Aoki returned to his stricken carrier alone. He reached a portion of the deck that was still clear of flames, crawled forward, and lashed himself to an anchor to await the end. However, when new orders seeped through, and it became apparent that the Japanese Fleet was in for a terrible beating, Yamamoto decided that a torpedo should send *Akagi* to the bottom. Before any were fired Commander Y. Miura, the carrier's navigator, climbed aboard the burning ship and begged Captain Aoki to be less dramatic, and persuaded him that to live and fight another day was more realistic. Aoki then followed Miura down a line and was taken off by a destroyer.

*Kaga*, which had been hit in the same attack, did not last as long as Nagumo's flagship. Exactly at 10:24 nine dive bombers came down out of the blue, each delivering a single missile. The first three were near misses that sent up towering columns of water. Four of the next six were inspired shots that pierced the forward, middle, and aft sections of the flight deck. One that hit between the bow and the bridge caught a small gasoline truck and spread flaming fuel over a wide area, and engulfed all the ladders and entrances to the bridge. Captain Jisaku Okada and almost all of the bridge staff were wiped out in this

sudden flash-blast, leaving Commander Takahisa Amagai, the air officer, in command.

Amid all this horror fires seemed to erupt from every opening in the vessel, and what men were left to make up a damage-control party fought these flames and explosions for what seemed hours, but their heroic efforts were for naught. Commander Amagai tried to maintain command from the starboard boat deck, but it was obvious that he hoped soon to be relieved. Within three hours *Kaga* began an ominous list and then came to a dead halt. Amagai was so disturbed with his unwanted command and hopeless problem that he imagined he saw a submarine. In his early reports he stated that he had spotted a periscope and had actually seen the wake of two torpedoes. Others stated that two torpedoes missed *Kaga*, and a third struck but failed to explode.

Later, however, Amagai declared that he had been swimming in the water when he first saw the submarine's periscope and the torpedo wakes. It was stated that when the third struck and failed to explode, it broke in half, the warhead went to the bottom, but the main chamber remained afloat and several Japanese sailors climbed on it and used it for a temporary raft. None of the destroyers standing by *Kaga* saw a periscope or tracks of torpedoes. What had finished the carrier was the continuing explosions from her interior gasoline tanks. Amagai and his remaining crew abandoned ship about 4:40 P.M., and all survivors were taken aboard the destroyers *Hagikaze* and *Maikaze*.

The third Japanese carrier to go down, *Soryu*, took only three bombs, but the devastation was most memorable. Deck parties were busy preparing planes for take-off and had little time to watch what was happening to *Kaga* nearby. A couple of explosions off their port bow, followed by columns of smoke, was the first warning. Thirteen American dive bombers attacked with beautiful precision. The first bomb hit tore into the flight deck near the forward elevator and completely wrote off the area. Fire and smoke erupted from below and a sea wall of gasoline tormented through the hangars, storage spaces, armament rooms, and workshops. Five minutes after the attack started *Soryu* was a hell of fire as explosions erupted all over the ship. Within ten minutes the main engines came to a halt, the steering gear went out, and all fire-fighting water mains were devoured. When survivors from below decks were driven to the flight deck, a great explosion somewhere within hurled dozens of seamen into the water. The order to "abandon ship" was given at 10:45 A.M., and all discipline was ig-

nored as hundreds of men leaped overboard and had to be rescued by destroyer crews. Only a few maintained true naval tradition and took to boats or rafts, as they had been trained.

In the middle of all this hopeless furor it was learned that Captain Yanagimoto, skipper of *Soryu*, had decided to remain aboard the bridge, but such was his popularity that his men formed a "rescue" party, headed by Chief Petty Officer Abe, a wrestling champion. When Abe climbed to *Soryu's* bridge he found Captain Yanagimoto standing, sword in hand, staring straight ahead in the classic position of his kind. When Chief Abe interceded and asked the captain to come down to a waiting destroyer, Yanagimoto maintained his silence. Abe then decided to pick him up bodily and haul him down, but after considering his captain's determined countenance, he turned away with tears in his eyes as Captain Yanagimoto began to sing Japan's national anthem. He went down with *Soryu* when the carrier rolled over and carried 718 officers and men to their end.

When *Akagi* was sunk, the fleet command fell temporarily into the hands of Rear Admiral Hiroaki Abe who, aboard the heavy cruiser *Tone*, commanded the Japanese Cruiser Division 8. The air operations were taken over by Rear Admiral Tamon Yamaguchi aboard *Hiryu*, the only undamaged carrier left, and it was this naval officer who in spite of the odds and the ill fortunes of the battle, decided to launch an attack against the American carriers. His available force consisted of eighteen dive bombers and six escorting Zekes, which took off at 10:40. This bold launching was made while *Akagi*, *Kaga*, and *Soryu* were in their death throes.

While the American airmen who had lived through the assaults on the Japanese ships were making their reports, word was received that *Yorktown* would probably be attacked. Commander R. M. Lindsey's SBDs in orbit awaiting their turn to land, were immediately ordered out of the area, and, wisely, they made for the deck of *Enterprise*; only two were lost by ditching when they ran out of fuel.

When the critical phase of the Battle of Midway had drawn to its close around noontime, three enemy carriers had been put out of action, the American surface force was still intact, but its air arm had received heavy casualties. *Enterprise* lost fourteen dive bombers, ten torpedo bombers and one fighter; *Hornet* lost all of her torpedo bombers and about a dozen Wildcats; *Yorktown* was missing all but one of her twelve torpedo bombers, two dive bombers, and three fighters.

So far the scales had tilted in our favor, but the battle was not yet over.

*Yorktown* put up a combat air patrol of twelve Wildcats, and began refueling a formation that had just been recovered. All fuel lines were cleared and filled with CO<sub>2</sub>. Her skipper then put on better than thirty knots and maneuvered all over the ocean. Eight Japanese dive bombers got through, although the Wildcats cut the rest to ribbons. Two more Vals were knocked down by guns aboard the cruisers *Astoria* and *Portland*, which left six that went in for the final attack.

Three direct hits were scored, two of them most serious, for as one dive bomber disintegrated under the wicked antiaircraft fire, it vomited a bomb that fell smack on *Yorktown's* flight deck, killed many men, and started fires below. A great pall of black smoke spread over the ship, but quick action with the sprinkler system and water curtains soon had the conflagrations under control. The next bomb arced in from the port side and found the smokestack, started more fires, ruptured the uptakes from three boilers, snuffed out five fires of the six boilers, and cut the speed to six knots. By 12:20 *Yorktown* was wallowing at a standstill. A third bomb exploded on the fourth deck and started a fire in a stowage compartment adjacent to the forward gasoline tanks and magazines, but the latter were promptly flooded, and CO<sub>2</sub> prevented the fuel from igniting.

Conditions on the bridge forced Admiral Fletcher to move his flag from *Yorktown* to the cruiser *Astoria*. All these measures were completed by 1:15 P.M., and the cruiser *Portland* was ordered to take the carrier in tow. This proved to be not necessary, however, as *Yorktown's* damage-control parties worked like supermen and had four boilers back in operation by 1:40, and, to everyone's amazement, *Yorktown* began to put on eighteen to twenty knots, and planned to recover and refuel her fighters.

In the meantime Rear Admiral Yamaguchi had learned from a lone Japanese reconnaissance pilot that the American force had three carriers, *Yorktown*, *Enterprise*, and *Hornet*. Startling news, but it must have been known by then that no one carrier could have launched so many planes as had attacked Nagumo's force. The big shock was to learn that *Yorktown*, believed to have been severely damaged in the Coral Sea battle, was out here.

With a frantic cast of his dice, Admiral Yamaguchi decided to risk a second attack against the American fleet. This time he prepared to launch ten torpedo planes, and six fighters, under command of Lieu-

tenant Joichi Tomonaga, a reputable wing leader. When all aircraft were ready for launching it was learned that the left wing fuel tank on Lieutenant Tomonaga's plane had been damaged during the strike against Midway and had not been repaired, or replaced. When it was pointed out, the young lieutenant just smiled and said, "Ignore it. Just fill up the other."

"You mean, sir, you want the plane spotted for take-off just the same?"

Although he knew that he would have insufficient fuel for a safe return to his carrier, Lieutenant Tomonaga refused to exchange seats with any other pilot, though several made the offer. The sixteen aircraft took off at 12:45 P.M., and at 2:30 the Japanese attack force spotted *Yorktown*, screened by several escorts. The carrier had time just to launch eight Wildcats, each with but twenty-eight gallons of gasoline in their tanks. There was no more time; they had to join the four planes that were airborne in the hope of staving off this second attack. Although other cruisers and destroyers had been detached to cover the wounded *Yorktown*, this was not enough. The enemy torpedo bombers came in at seven thousand feet from the west, and because of recognition difficulties, no antiaircraft fire was put up until the Wildcats were actually tangling with the Zeke fighters.

*Yorktown's* helmsman put her over hard left as the cruisers curled about in an attempt to keep station. The torpedo planes broke up and came in from four varying angles at about masthead height. The cruisers tried blasting their big guns at the sea to send up towering columns of water. The shells erupted on impact and built up massive walls of sea, but four of the enemy planes evaded them and continued on in. At exactly 2:42 *Yorktown* dodged two torpedoes, but two others caught her cold. Both went into the port side where they ruptured gasoline and oil tanks and jammed the rudder controls. With power sharply cut *Yorktown* took on a list of seventeen degrees, and over the next twenty minutes went over to more than twenty-six degrees.

Counterflooding was out of the question and the damage control officer advised Captain Elliott Buckmaster that, with what power they had, maintaining watertight integrity—a Navy mouthful meaning plugging the leaks—was impossible. At 3 P.M. Captain Buckmaster gave orders to abandon ship and four destroyers moved in to take off the crew, or pick up men from rafts. The sea was smooth, the water fairly warm, and the situation none too hazardous. It is believed that no member of the crew was drowned.



As was to be expected, the heroic Lieutenant Tomonaga never returned, and one of the Japanese pilots who survived the attack said later: "I remember seeing his plane with the bright yellow tail daring the heaviest of the antiaircraft fire. It was the worst I had ever seen. I saw him actually launch his torpedo, and then, before he had any idea where it was heading, his plane disintegrated under the enemy fire. His assault on the *Yorktown*, carried out as it was, was equally as heroic as a kamikaze attack."

The pilots who returned to *Hiryu* after this second strike believed that they had attacked two different carriers, and for some time were positive that they had damaged two American flat-tops. What must have happened was that *Yorktown* was put back into action so fast after the first attack, that enemy pilots believed they were attacking a second carrier of the same type.

Admiral Fletcher had sent out a scouting force to make certain of the enemy's disposition. He was almost certain that Admiral Nagumo had but one carrier left, but he wished to be sure. By 2:45 Lieutenant Wallace C. Short had returned with a very complete report that he had seen *Hiryu*, two battleships, three cruisers, and four destroyers steaming north about one hundred miles northwest of *Yorktown*'s last position. At 3:30 Admiral Spruance ordered *Enterprise* to seek out the enemy and attack again. Twenty-four SBDs, ten of them from the abandoned *Yorktown*, were sent out, minus any fighter escort since all Wildcats available were required for combat air patrol. This formation was led by Lieutenant Commander Wilmer E. Gallaher who soon found and lashed at the lone Japanese carrier, *Hiryu*.

When *Hiryu*'s few planes and pilots returned at 4:30, Admiral Yamaguchi, although he had very little with which to fight back, was determined to make a twilight attack that he hoped would be more successful. A meal was served to all hands and a special dish of sweet rice balls was prepared to mark the occasion. A small combat air patrol was maintained above, and as fast as men finished their meager meal, they were rushed to the hangars or flight deck to prepare aircraft for this last effort. A fast reconnaissance plane was readied, and was to be sent off about 5 P.M. when suddenly an American dive-bomber force appeared overhead. The young Lieutenant Commander Gallaher had sneaked in from the southwest with the sun at his back, and the Japs, who had no radar, were caught flat-footed.

Thirteen of the twenty-four planes selected the Japanese carrier, and the ship's antiaircraft guns went into action. *Hiryu*'s skipper, Captain

Kaku, put her over hard to the right, a lumbering action that enabled her to dodge the first three bombs. More planes came down, and four direct hits were scored in quick order causing fires and wracking explosions. Columns of black smoke coiled up as the carrier began to lose speed. All four bombs struck near the bridge, and the concussion smashed everything nearby, heavy bridge windows went out, men were decapitated by flying glass, the forward elevator was ripped up and left standing like a drunken billboard. Fire, borne on torrents of gasoline, washed down the deck, lapped at the fueled and armed aircraft, and licked them up like fragile toys. More burning fuel billowed in other directions, blocking off companionways, ladders, and exits. It poured down scuttles, made for the hangar decks and engine rooms. Men who had bravely stayed at their posts to aid in damage control, were never heard from again; they were either scorched to a crisp or suffocated by smoke and heat.

With the elimination of this last Japanese carrier, American airmen, Navy and Army, could concentrate on the screening ships. A few B-17 bombers out of Midway joined the action at this point, but other than contributing a few light bombs to the burning *Hiryu*, their strafing was not too successful. The battleship *Haruna* was attacked by four high-level bombers and two dive bombers, but escaped unscathed. *Tone* was attacked by three dive bombers, but also escaped. *Chikuma* dodged and darted to evade nine dive bombers in three separate attacks.

By 9:23 P.M. *Hiryu* was a wallowing wreck, with a fifteen-degree list. A handful of men were still trying to maintain steerageway and control the fires. A few pumps were repaired and a brave effort made to save her. Destroyers moved alongside to assist and supply the crews with food and refreshment. Finally, when all access to the engine rooms was cut off, it was realized that there was no hope of saving her. Admiral Yamaguchi ordered *Hiryu*'s crew to abandon ship. The eight hundred men remaining were ordered to the deck and the admiral addressed them as follows: "As your commanding officer, and commander of this carrier division, I am fully and solely responsible for the loss of *Hiryu* and *Soryu*. I intend to remain aboard to the end. I command all of you to leave the ship and continue your loyal service to your Majesty and Emperor."

Admiral Yamaguchi's staff begged to remain with him, but he ordered them off, then lashed himself to the bridge structure, as did Captain Kaku who had also decided to go down with the ship. At

5:40 the next morning torpedoes from screen destroyers, *Kazagumo* and *Yugumo* bored into her, but *Hiryu* remained afloat until 8:20 A.M. By that time a number of seamen who had escaped the entrapment in the engine rooms, mainly through the explosions of the coup de grâce torpedoes, made their way to the deck, looked around and saw that they had been abandoned. They put off over the side in a raft, and were later picked up by an American destroyer.

Now in full retreat to the northwest, Admiral Nagumo aboard his flagship *Nagara* knew the full proportions of his defeat. The Navy General Staff in Tokyo was shocked to learn that the toll was four of their finest fleet carriers, while American surface strength had suffered little. Their intelligence was very faulty; they had no idea how many carriers Admiral Spruance still had available, and so there was no argument. It would be well to call off the Midway operation.

There were some officials in Tokyo who feared that Admiral Yamamoto, in a desperate bid to wipe out the disgrace of Admiral Nagumo's defeat, might take another gamble and sacrifice the rest of the force. But no one made a decisive move to prevent this; after all, the Japanese Navy *still* had more warships of every category than had the United States Navy in the Pacific.

At sea, while moving for a safer position, Japanese air officers thought they could still put a small strike force into the air from the decks of the light carriers *Hosho*, still with Admiral Yamamoto's group, and *Zuiho*, attached to Admiral Kondo's Midway attack force. Supplemented by float planes off the battleships and cruisers, it was believed that enough damage could be inflicted on the American carriers to reduce their offensive power and perhaps enable the Japanese battleships to destroy Spruance's force, and capture Midway. Experts in gunnery were positive that the big weapons of the Midway attack force could keep the land-based air squadrons pinned down long enough to turn the tide. Other officials were convinced that the Yamamoto group could race through all American opposition by making the most use of its antiaircraft guns. A combination of all these plans was submitted, but Rear Admiral Ugaki, Yamamoto's chief of staff, turned it down as stupidity, a face-saving plan of suicidal recklessness and folly. Without mincing words he concluded: "Some of the enemy's carriers are still intact. The airfield at Midway can still launch planes, and our battleships, for all their fire power, would be

destroyed by enemy air and submarine attacks, long before we could get close enough to use our big guns."

There was no question but that they would have to accept the conditions as a defeat. A few of the Samurai class wailed: "But how can we apologize to His Majesty?"

Admiral Yamamoto, another realist, ended that discussion with "Leave that to me. After all, I am the only one who will have to apologize to His Majesty." He was more concerned with the problem of rounding up the scattered Japanese forces, and effecting their retirement from battle under the ever-present threat of enemy attack.

It will be remembered that the commander of the Combined Fleet had ordered Admiral Kondo to carry out a night bombardment of Midway some time prior to the destruction of the Japanese carriers. Kondo's force included a support body, made up of four heavy cruisers, *Kumano*, *Suzuya*, *Mikuma*, and *Mogami*, and two destroyers of Destroyer Division 8. Their recall resulted in a pathetic foul-up, important from a tactical point of view, but of little credit to the opposing forces.

Rear Admiral Takeo Kurita, in command of this high-speed attack operation, began his run-in on June 4 when he was some four hundred miles west of Midway. By the time he had reached a point ninety miles from his objective, the Combined Fleet staff realized that all hope of a night bombardment attack was off, and Kurita was ordered to return as quickly as possible. On the way back *Kumano* which was leading the division, sighted a U. S. submarine, and emergency turns were ordered that caused a collision in which *Mogami*, the last ship in the line, failed to move fast enough, and slammed into *Mikuma's* port quarter. *Mogami* lost her bow section forward of the front turret and had to come to a halt. *Mikuma* was damaged only slightly and continued on.

Admiral Kurita was notified of the accident and he turned back to stand by *Mogami*, now able to limp on at about twelve knots, but they all knew that they were in a hazardous situation and could be pounced on at any minute.

Admiral Spruance meanwhile was not certain of the actual situation; he knew that three and perhaps four Japanese carriers had been hit. Only Ensign Gay, floating about under an aircraft pillow, had any idea what losses the Japanese had incurred. The fighters that were flown off *Hiryu* had attacked a number of Army B-17s off Midway, and the commander of the B-17s, Major G. A. Blakey thought that

these Zekes might have come from a fifth carrier. When this information came through, Admiral Spruance naturally wondered how far the enemy might go, working on the calculated risk theory, and consequently he withdrew *Enterprise* and *Hornet* eastward, since he did not wish to have a night engagement against the heavy guns of Yamamoto's fleet, and also desired to keep close enough to Midway to have what land-based air support might be there. He did not reverse his course until midnight. These five hours of steaming eastward ruined all chances of ever catching up with Yamamoto's tattered forces. So far as the Navy was concerned, this was the close of the Battle of Midway.

The Army Air Force and a Navy submarine, *Tambor*, tried to finish Admiral Kurita's damaged cruisers. Lieutenant Commander J. W. Murphy, whose pig boat had caused the collision, kept in touch with the situation and by 4:12 the next morning, June 5, warned Midway. A Catalina went out and confirmed Commander Murphy's report, so Captain Cyril T. Simard ordered a number of Flying Fortresses to make an attack on the crippled cruisers that were being convoyed by two destroyers, but they were unable to find their targets, so Captain Simard then sent off six Marine SBDs and six Vindicators, all that were left that were capable of flying such a mission. They attacked at 8:05 A.M., but the two Japanese cruisers put up such a terrific anti-aircraft fire, none of the Marine planes was able to hold a clean run. No hits were scored, but the dive bomber being flown by Captain Richard E. Fleming was hit just as he was over his bomb-dropping point. Whether the Marine pilot flew it out as his last effort, or whether the plane continued on its own is not known, but plane, bomb, and pilot hit smack on top of *Mikuma's* eight-inch gun turret.

Early in the morning of June 6, when Yamamoto had collected most of his deployed forces, and retired well beyond the range of Admiral Spruance's carrier aircraft, *Enterprise* launched a reconnaissance flight that sighted the two crippled cruisers attempting to escape to the westward. By 8 A.M. *Hornet* launched twenty-six SBDs and eight Wildcats, and at 10:45 *Enterprise* sent off thirty-one SBDs, three TBDs and fourteen F4Fs.

This combined attack caught *Mogami* and *Mikuma* cold. They had been deserted, and had no air cover of any kind. In the first of several attacks *Mogami* received two severe bomb hits, one of which dug deep into her Number 5 turret and killed every man inside. Two more hits started huge fires, a third sealed up an engine room, but, bearing

a charmed life, *Mogami* staggered blindly on, finally reached Truk where she underwent temporary repairs, and a year later rejoined the fleet.

*Mikuma* was smothered with bombs, and after two such drenchings, her captain ordered her to be abandoned. The destroyer *Arashio* stood by to give fire-fighting aid, but could only rescue hundreds of men from the water. During a final attack by pilots off *Hornet* a single bomb hit the deck of *Arashio*, killing most of the seamen who had been rescued from *Mikuma*.

The Battle of Midway was over, a great victory had been scored, but as is usually the case, there were bitter recriminations when the second-guessers and historians went over the records. To some the abandonment of *Yorktown* was unjustified. It will be remembered that on the advice of his damage-control officers, Captain Buckmaster had ordered her abandoned at 3 P.M. on June 4 when she was listing at twenty-five degrees, but by some mysterious force she had righted herself and was still afloat twenty-four hours later. Pilots who flew over her on June 5 stated that she appeared to be intact; certainly she was not burning, but instead was behaving as though she could be saved.

The destroyer *Hughes* had been ordered to stand by the hulk and sink her with torpedoes if there seemed any chance that the enemy might capture her. *Hughes* maintained her watch all that night and at dawn a lookout reported that machine-gun fire was coming from the abandoned carrier. A boarding party went over and returned with two seamen who had been left for dead. One had a fractured skull and other injuries, the other a serious abdominal wound. The latter man, who died shortly after being transferred to *Hughes*, had managed to crawl to the battered flight deck and fire some machine guns to attract attention. The boarding party also discovered three coding machines left intact, and great numbers of secret documents strewn all over the ship.

It is generally agreed that had a fleet tug been available, *Yorktown* could have been towed to a friendly berth; some critics argued that she might have been taken in tow by a cruiser, as was done with other damaged carriers later in the war. But again, this may be a case of keen hindsight. Actually, Admiral Nimitz did order the fleet tug *Navajo*, then off the French Frigate Shoals, the minesweeper *Vireo*, patrolling off Pearl Harbor, and the destroyer *Gwin* to join Spruance's

forces. *Vireo* arrived first about noon of June 5 and put a towline aboard, but was unable to make much headway. Later that afternoon *Gwin* turned up, but by then *Yorktown* was listing badly, and was slightly down by the head. A small salvage party went aboard to jettison the anchors and all loose gear, but little else could be done when darkness fell.

The next day Captain Buckmaster took over a larger salvage party of twenty-nine officers and men who had volunteered for the work. This party worked like Trojans, dousing fires, and correcting the list so that by midafternoon considerable progress had been made. Four destroyers circled the damaged carrier, maintaining a taut screen, but the Japanese submarine I-168 that had shelled Midway early on June 4, had moved away and headed for the reported position of *Yorktown*. Thus, by the afternoon of June 6 Lieutenant Commander Yahachi Tanabe had brought his sub up to, and penetrated, the destroyer screen undetected. At the same time the U. S. destroyer *Hammann* was secured to the carrier's side to provide power, food, and water for the salvage crew.

At 1:30 Commander Tanabe fired four torpedoes, the first missed, the next went under *Hammann's* keel and exploded against *Yorktown*, the fourth hit the destroyer amidships, breaking her in two. There was considerable loss of life, and in the general excitement, the submarine escaped.

Nine, out of thirteen officers, and seventy-two of 228 seamen were killed outright, and several more died later of their wounds. Most of these were probably killed by pre-set depth charges aboard *Hammann* that went off when there were many men floating in the water. *Vireo* cut her towline, and the salvage party was transferred to the destroyer *Benham*. Captain Buckmaster intended to continue operations early the next morning, but during the night the carrier's list continued, and by daylight it was evident that there was no hope of saving her. At 6 A.M. every bluejacket in the area stood to attention as *Yorktown* rolled over and sank in a two-thousand fathom depth.

The Battle of Midway was the first great defeat inflicted on the Japanese Navy in the Pacific war. It was a staggering blow to the Rising Sun planners, and it made them cancel their ambitions for the conquest of Fiji, New Caledonia, and New Zealand. For the first time they were on the defensive.

## CHAPTER VII

# THE CONQUEST OF GUADALCANAL

THE HISTORY of aircraft-carrier warfare is a continuing story of triumph and tragedy. The gratification and feeling of relief after the victory at Midway lasted for two months when on August 8, 1942, the American public was introduced to a geographical jawbreaker—Guadalcanal. Few persons could pronounce it correctly, fewer still had the slightest idea where it was, and most Americans were to wish they had never heard of this mysterious island in the Solomons group.

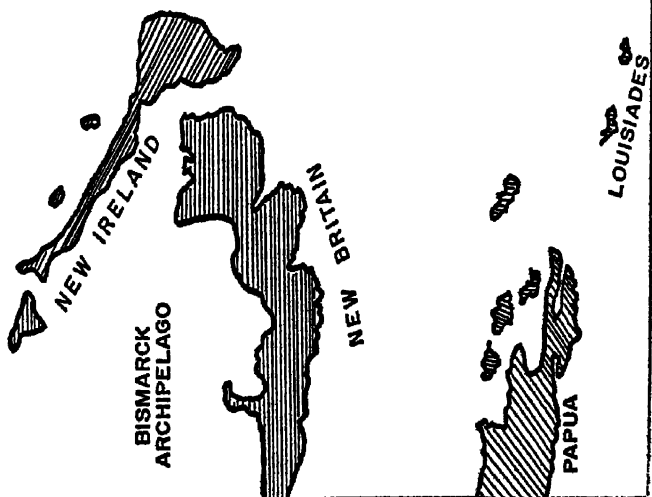
Guadalcanal is only ninety miles long and twenty-five miles wide, with no natural resources but mud and coconuts, and inhabited chiefly by malarial mosquitoes and fuzzy-topped tribesmen. Yet this inhospitable island was fought for by the Army, Navy, and Air Forces of the United States and Japan for nearly six months. Six major naval engagements took place within the scope of twelve weeks, and the waters north of Guadalcanal that lapped at the Savo and Florida Islands became the graveyard of so many ships that American seamen named it Ironbottom Sound.

Guadalcanal, which by some vague processes of European colonization had become a British protectorate, was populated by about ten thousand natives, twenty Australian infantrymen, and a squadron of Royal Australian Air Force PBY Catalinas. The Japanese took it over with little trouble in May, but a loyal force of Australian "coastwatchers" hid away and established a small network of radio stations that played an important role in the conflict that raged through the Solomons and Bismarcks over the next two years.

Actually, neither Japan nor America took much notice of Guadalcanal until Admiral King decided that Tulagi on Florida Island to the north might be important in the lifeline that looped between North



BATTLE AREA  
IN THE  
**FIGHT FOR GUADALCANAL**  
AUGUST 9-25, 1942  
*ALSO KNOWN AS  
EASTERN SOLOMONS*





America and Australia; it might provide a jumping-off point for a drive up the Solomons to Rabaul. General MacArthur also supported this idea since Rabaul stood in the way of his promised return to the Philippines. Efate Island in the New Hebrides became the first steppingstone in this plan when the forces of Major General Alexander M. Patch, Jr., moved in and enabled field engineers to develop an airfield there. U. S. reconnaissance planes that flew out of Efate discovered that the Japanese were working on an airfield near Lunga Point on Guadalcanal, a base that became the renowned Henderson Field.

This enemy threat accelerated American movement in this area and triggered Operation Watchtower, a plan to seize and occupy the New Britain-New Ireland-New Guinea area, including the main enemy base at Rabaul; all this to be carried out by August 1, 1942.

The forces involved were chiefly the 1st Marine Division and a South Pacific amphibious force under Rear Admiral Richmond Kelly Turner. Over Admiral Turner in the chain of command was Vice-Admiral Frank Jack Fletcher, aboard the carrier *Saratoga*, while Rear Admiral Leigh Noyes had immediate command of the Air Support Force which was composed of *Saratoga*, *Wasp*, and *Enterprise*, the battleship *North Carolina*, five heavy cruisers, sixteen destroyers, and three oilers. The amphibious force was escorted by eight cruisers—three of them Australian—and a destroyer screen under Rear Admiral Victor A. C. Crutchley of the Royal Navy. All this organization took time and the August 1 target date was forgotten when Admiral Turner's force was delayed and did not round Cape Esperance, Guadalcanal, until August 7.

The enemy was taken by surprise and the first landings were fairly successful. Eleven thousand Marines from fifteen landing craft went ashore on a beach four miles east of Lunga Point, and by the following afternoon were in possession of the airstrip, then under construction, and an important Japanese military base at Kakum on the west side of Lunga Point.

It should be noted that all this success took place on the west side of Lunga Point, but a smaller force that went ashore on the beach on Tulagi Island to the north ran into bitter opposition. It is true that small seaplane bases on the islands of Gavutu and Tanambogo off Florida Island were captured, but we lost several transports, and the destroyer *Jarvis* when Japanese torpedo planes, flying out of Rabaul, roared in. Fighters from three American carriers eventually beat off these attacks and to all intents and purposes Tulagi and Guadalcanal

were in our hands. At that time few men would have predicted that more than twenty-six weeks of stiff fighting would be necessary to secure what had been taken in the same number of hours.

The Japanese were not slow in preparing retaliation, and reports of important ship movements began flashing out of all corners of the Western Pacific. On August 8 a Lockheed Hudson of the Royal Australian Air Force located a force of Japanese cruisers moving southwest at high speed. A second Hudson reported a strong force of three cruisers, three destroyers, and two seaplane tenders north of the strait between Bougainville and Choiseul.

Admiral Gunichi Mikawa, Commander of the Japanese Eighth Fleet at Rabaul, next sent out a series of float-plane reconnaissance sorties, and from these gained an excellent picture of the situation off Tulagi. He was told that the enemy had one battleship, six cruisers, nineteen destroyers, and eighteen transports in the area, and with that knowledge the Japanese vice-admiral put on twenty-four knots, and by 4 P.M. of August 8 was in the New Georgia Sound south of Choiseul. The American landing areas in Guadalcanal were only 125 miles away. Admiral Mikawa's battle plan was first to make a torpedo attack on the United States ships at the Guadalcanal beachhead, and then cross Ironbottom Sound where he planned to shell and torpedo his enemy, before retiring to shelter north of Savo Island.

Although Admiral Turner had no clear picture of the enemy's movements, he knew that he was limited by his task and the narrow waters between Florida Island and Guadalcanal. He had a general idea of the enemy's strength, but no idea of his battle plans. This was a different picture than that at Midway. Would the Japs attack by air, submarine, or the big guns of their surface ships? Even the ever-reliable "coast-watchers" were hampered by the fact that Admiral Mikawa had the shroud of night to cover him. A third Australian Hudson sighted the enemy at 10:26 P.M. on August 8, but the pilot's report did not reach Admiral Turner for more than eight hours, since the Hudson radioman sent his message in code and the news had to be decoded either in Canberra, Australia, or Pearl Harbor. Both Admirals Turner and Crutchley, who had already been worked over by torpedo planes out of Rabaul, presumed that they would be attacked by air in daylight the following day. Neither supposed that Admiral Mikawa might make a surface strike that night. Foul weather curtailed any air search by planes from the American seaplane tenders.

Where were the aircraft from the U. S. carriers?

Long before at the group conference held on July 26, Admiral Fletcher had warned that he would not remain within supporting distance for more than two days. Admiral Turner had pointed out that he could not possibly unload all his transports in less than four days, and most certainly would need air cover all that time. But Admiral Fletcher, who had seen the loss of *Lexington* and *Yorktown*, refused to take such a risk. At 6 P.M. August 8, he radioed Vice-Admiral Robert L. Ghormley, Commander of the South Pacific Force, at Nouméa, New Caledonia, that his fighter-plane strength had been reduced from ninety-nine to seventy-eight, and in view of the large number of enemy torpedo planes and bombers in the area, recommended the immediate withdrawal of his carriers. At the time Admiral Fletcher's carriers were one hundred twenty miles from Savo Island—actually off the north-western cape of San Cristobal Island. Instead of waiting for a reply to his recommendation, Admiral Fletcher moved off southeastward.

What happened has little to do with the history of aircraft-carrier warfare. It is sufficient to state that in the Battle of Savo Island, "the first large surface action since Santiago to be fought by a predominately United States force," the Americans were all but annihilated, while the Japanese escaped virtually unscathed. An investigation later concluded that inadequate condition of readiness on all ships to meet a night attack, and particularly the complete surprise achieved by the enemy, were the major causes of this defeat. This was no skimmish, for it took the lives of 1023 American officers and men, and severely wounded 709 others. Whether the premature withdrawal of Admiral Fletcher's carrier force had an important effect on the engagement can be argued from here to eternity. The more pertinent factor is that the enemy was prevented from reaching the all-important transports, which in the end may have resulted in the eventual securing of Guadalcanal.

The American landings at Guadalcanal and Tulagi stirred up a furor of planning and action. The Battle of Savo Island had returned the initiative to the Japanese Fleet, and although the U. S. Marines still clung to their beachheads, the surrounding waters, to all intents and purposes, were in control of the Japanese. Their commanders of air, land, and sea forces met at Rabaul to devise a plan to dislodge the U. S. Marines by the end of August. One phase of this scheme was to land a force of Japanese on the island, but the Leathernecks soon booted

them off. It was then obvious that a bigger, and better-supported, landing operation would have to be organized. It was known as Operation "KA" and was to be supported by the Japanese Eleventh Fleet, naval bombardment by their Eighth Fleet, and planes off two large carriers were to dispose of any U. S. Navy surface interference.

Operation "KA" was mobilized by August 21 and Admiral Yamamoto, riding off Truk, had three carriers, three battleships, five cruisers, eight destroyers, and a seaplane tender with which to operate. At Rabaul, Admiral Nishizo Tsukahara had four cruisers, five destroyers, and more than one hundred planes of the Eleventh Air Fleet.

This time Admiral Fletcher's carrier force of *Saratoga*, *Wasp*, and *Enterprise* was assigned the task of protecting the sea lanes into the Solomons, but it was to stay out of the radius of Japanese search planes. With supporting cruisers and destroyers, *Hornet* sailed from Pearl Harbor on August 17 for the Coral Sea. On the night of August 21 a Japanese destroyer, *Kawakaze*, foxed the U. S. destroyer *Blue* in Ironbottom Sound and blew off her stern with a torpedo. *Blue* was towed safely into Tulagi, but had to be scuttled there as she was badly damaged.

Two days later the Japanese Combined Force was advancing from Truk. It included a diversionary force, headed by the small carrier *Ryujō*, that was intended as bait to pull important American forces out of the main play. At the same time planes from Admiral Yamamoto's big carriers would direct their efforts against American carriers and Henderson Field. It is interesting to note that a U. S. patrol plane spotted these transports at 10 A.M. on the morning of August 23, and with the report of this finding, the action began.

The *Saratoga* air group sent out thirty-one SBDs and six TBFs by 2:45. Ninety minutes later Marines on Guadalcanal launched a twenty-three-plane strike at the reported transports. Neither group was successful in finding the transport force and by twilight all these planes dropped down at Henderson Field for refueling and refreshment. Later a night-strike of five PBVs went out to find the enemy invasion force but were no more successful. Actually, Rear Admiral Raizo Tanaka had reversed his course to the northwest when he had caught the patrol plane's radioed warning. More smart switching about by the Japanese befuddled everyone for another twenty-four hours.

The old problem of refueling came up and Admiral Fletcher sent *Wasp* and her group southward for a fueling rendezvous, since it was thought—erroneously—that the destroyers were running dangerously

short. This proved most unfortunate as Admiral Yamamoto had ordered a nonstop steaming to the Solomons and had refueled at sea. The American force was deprived of one of its three carriers with a crucial battle just around the corner. The night of August 23-24 was overcast and rainy and the *Saratoga's* planes and air crews were still at Henderson Field, but with a brighter morning all flew back to *Saratoga*, landing on at 11 A.M. of August 24.

While this plane recovery operation was being carried out, Lieutenant David C. Richardson, who was leading an element of four Wildcats, went after a Japanese snooper some twenty miles from the carrier and shot down this airplane, a four-engined Kawanishi flying boat, the first of this type to fall before Navy guns. At 9:05 the *Ryujo*-bait group was spotted by a Wildcat as the enemy force steamed south some 280 miles northwest of Admiral Fletcher's group. At 11:28 another plane reported the bait force about 245 miles away. Evading another patrol, the Japanese sent off fifteen fighters and six bombers from *Ryujo* to fly over Guadalcanal. These aircraft were joined by a number of twin-engined bombers from Rabaul, but only minor damage was inflicted on Henderson Field. The pilots of Marine Fighter Squadron 223 went up and knocked down twenty-one of the raiders.

This forced Admiral Fletcher's hand, and he launched thirty SBDs and eight torpedo planes by 1:45 P.M. Commander Harry D. Felt led this formation and went searching for *Ryujo*. All told, Admiral Fletcher had fifty-one bombers and fifteen torpedo planes in the air on various missions, and had only fourteen bombers and twelve torpedo planes available aboard *Saratoga* and *Enterprise*. While everyone was concentrating on the *Ryujo*-bait force, search planes off *Enterprise* reported more enemy contacts that indicated there could be other threats; one 198 miles distant, another 225 miles away, and all three at different positions. This was exactly as Admiral Yamamoto had planned it. As may be imagined, Admiral Fletcher was very puzzled.

In addition radio communications between U. S. Navy ships and aircraft for some obscure reason suddenly went sour. Admiral Fletcher tried to switch Commander Felt from attacking *Ryujo* to the more important *Shokaku* and *Zuikaku* that had been reported to be 198 miles away. (The distance was actually nearer 230 miles.)

The winds changed, aircraft requiring refueling had to be accommodated, and what plans had been made, had to be reconsidered owing to problems of possible night landings. It was fully realized, too, that the enemy might attack the U. S. carriers at any time since two

more enemy snoopers had been shot down by 12:50 P.M. An extra combat patrol was put up, and all told, Admiral Fletcher had fifty-four Wildcats with which to meet any enemy strike.

At 3:15 two patrol planes off *Enterprise* found *Shokaku* and roared down, scoring a light-bomb hit and a near miss that inflicted minor damage and a few casualties. In the meantime five Avengers off *Enterprise* released torpedoes at *Ryujo* but failed to score a hit of any kind. Two others that went after the cruiser *Tone*, were jumped by Zekes, and one was downed before either could make an attack. Commander Felt from *Saratoga* was unaware that he had been switched to the *Shokaku* group, and he found *Ryujo* with little trouble. His SBDs were under the command of Lieutenant Commander Dewitt W. Shumway, an experienced leader who had been at Midway. Just as *Ryujo* turned into the wind to launch planes, his SBDs went down and made bull's-eye hits on her with at least thirty 1000-pound bombs. Not content with this, six Avenger torpedo planes, under Lieutenant Bruce L. Harwood, sat it out until the dive bombers had confused everyone aboard the light carrier, and then went in on both bows of the stricken vessel.

Commander Felt then took his planes up to some broken cloud cover and watched the drama play itself out. *Ryujo* below was steaming in uneven circles, belching black smoke from her gaping wounds, and listing twenty degrees to starboard. Finally her engines ground themselves to junk, and *Ryujo* came to a halt. The abandon ship order was given, and *Tone* moved in to take off survivors. By 8 P.M. that night the "bait" carrier, which had fulfilled her mission, rolled over, showed her badly holed hull and sank. Only one American aircraft had been lost, but Admiral Yamamoto must have been thankful that *Ryujo* had played her part well, for his main force was now free to go against Admiral Fletcher.

Just before it was shot to rubble by a Wildcat, a Japanese float plane off the cruiser *Chikuma* managed to key off the position of Fletcher's carriers. Admiral Nagumo, still chagrined by the battle at Midway, knew that he'd never have a better opportunity to repay the beating. He knew also that most of the American carriers' planes were away, sending poor *Ryujo* to her grave. So at 3:07 P.M. when Commander Felt's group was enjoying its turkey shoot, the first of two Japanese air strikes went searching for the big game their bait had provided.



About four o'clock the first "bogies" were spotted on U. S. radar screens, indicating that enemy planes were only some eighty-eight miles away. More Wildcats went aloft to make a total of fifty-three fighters that were flying a combat-air patrol. The bombers and torpedo planes still aboard *Saratoga* were launched and sent to join a like group that had been flown off *Enterprise*. They all headed out to attack the approaching enemy, and the fighter directors aboard the "Big E" sat back to do some serious work, but just when everything seemed complete, the "bogies" disappeared from the screens. At the same time so many planes in the limited space, all carrying out routine contacts, jammed the one narrow radio frequency and added to the confusion.

The radar "bogies" did not reappear until 4:19, and by 4:25 a fighter-plane element substantiated what the radar had been trying to explain, but the fighter pilots gave it with more detail. Admiral Fletcher was positive now that there were thirty-six bombers at twelve thousand feet, being escorted by many other aircraft above and below. It was at this point that radio discipline went to the four winds, and the fighter directors were seriously hampered in determining exactly where the opposition force was located. And to top all that, the Japanese commander broke up his force into three sections when he was less than twenty-five miles away. With that the radar picture became totally confused. There was nothing to do but to allow the fighter groups to take over and work out the various problems on their own.

During all this one Navy NCO pilot, Warrant Machinist Donald E. Runyon, who was leading a Wildcat fighter section, had a field day. He worked his way into the sun from about eighteen thousand feet, and went down on the enemy dive bombers. He picked out one Val, gave it a short but accurate burst. It exploded in mid-air. Moving back into the solar glare, Runyon heeled over and went down on a second. A burst of incendiary bullets quickly torched that one. In trying a third time, Runyon failed to see an avenging Jap Zeke that came down on him. The Zeke missed him and had to pass on ahead, placing himself smack in Runyon's sights. Another squeeze of the trigger gear and the Zeke burst into flames.

Convinced that this was his day, Runyon zoomed, turned, and came dead under another Val. By tilting his nose gently the U. S. Navy man fired and started another aerial conflagration. As he curled away to clear this debris, another Zeke nosed in to interfere. This time Runyon was able only to bespatter him and chase him out of the play.

During all this aerial aggression two of Runyon's section mates dam-

aged four more Japanese bombers and nudged two more out of their attack glides.

While returning with a squadron of ten SBDs from the *Ryujo* sinking, Lieutenant Commander L. J. Kim came upon four enemy dive bombers that were roaring along at about five hundred feet. Commander Kim took his mob down, firing their nose guns, but more important, giving the rear gunners a fine series of targets. Three of the enemy ships piled into the sea, the fourth fluttered away dragging a smoke plume.

All this plane-to-plane action took place well outside the carrier force area. *Enterprise* was steaming at twenty-seven knots, holding a course into the wind, but within the carrier's screen all lookouts were having trouble finding the enemy. They were dead overhead, and at 4:41 the first attacks began. There was no uncertainty now as to where the Japanese bombers were. *Enterprise* wriggled and jinked about as enemy bombs chugged into the water on all sides.

The first to hit the "Big E" caught a corner of the after flight-deck elevator and crashed on through the hangar deck into the compartment below. This was a delayed-action baby, and when she decided to let go started a number of fires, twisted decks and hull plating, and killed thirty-five officers and men. A fire main, ripped by the blast, automatically doused one of the worst fires, but large fragments tore holes in the hull, sea water spouted through, and *Enterprise* took on a slight list.

Thirty seconds later a second bomb smacked in, penetrated an ammunition locker and the cumulative effect of the explosions wrecked a brace of five-inch guns and killed the entire gun crew of thirty-eight men. The area was a flaming cauldron of death. At 4:45 a third bomb pierced the flight deck aft of the island structure, but fortunately either the detonator was defective or the explosive content faulty, for it caused only minor damage. With this the attack seemed to be over.

The damage-control officer, Lieutenant Commander Herschel A. Smith, led his teams in the valiant effort to save the carrier, which, in spite of her wounds, was still putting on thirty knots. Every man aboard who had any knowledge of fire-fighting, electrical work, carpentry, or the myriad intricacies of her pumping systems was put to work. They fought burning ammunition, riveted metal plates over her gaping wounds, or jettisoned wreckage and damaged material. Within an hour after the last bomb had pierced her deck *Enterprise* was doing twenty-four knots and had turned into the wind to recover her air-

craft. By 5:50 the first incoming plane hooked into an arrester-gear cable, and in no time twenty-five more followed in safely. At that minute all damage, loss, and casualties were forgotten temporarily.

But unfortunately it would appear that aircraft carriers are prone to delayed-action problems. When all seemed well *Enterprise* suddenly started to misbehave. It was disclosed later that water and fire-fighting chemicals had gushed through a broken vent above the steering-engine room, grounded a motor and jammed the rudder over hard at twenty degrees right.

The men working in this compartment were knocked out by the accompanying fumes and were unable to switch over to a stand-by plant. *Enterprise* ran wild and narrowly missed a collision with the destroyer *Balch*. With the rudder jammed in this manner the carrier could not be towed until Chief Machinist's Mate William A. Smith, after being knocked out twice by fumes, made his way into the compartment—about thirty-eight minutes later—and cut in the stand-by motor.

Had Admiral Nagumo's second aerial attack been timed during this critical half hour, *Enterprise* might not have escaped. As it was, an enemy force of eighteen dive bombers, nine torpedo planes, and three fighters, the same force that had tangled with Commander Kim's formation, took a wrong turn out of that skirmish and missed the floundering carrier. Such are the fortunes of war.

Although both sides decided to break off the action, neither considered the battle over, and during the night of August 24-25 several of Admiral Tanaka's destroyers bombarded American positions off Lunga Point, while float planes distributed annoying anti-personnel bombs. Making the most of a gaudy moon, eight Marine dive bombers took off from Henderson Field to pound the Japanese destroyers. No hits were scored, but the effort relieved the tension.

On a later foray, Lieutenant Colonel Richard C. Mangrum's SBDs unexpectedly encountered Admiral Tanaka's light cruiser *Jintsu* which was leading the Japanese Transport Group. Second Lieutenant L. Baldinus scored a direct hit on Tanaka's flagship, a shot that bored a great hole between her two forward guns. Sixty-one men were killed and several big fires were started. A hit was also scored on *Kinryu Maru* which was loaded with troops. The transport had to be abandoned and the soldiers transferred to the destroyer *Mutsuki*, while Admiral Tanaka hauled his flag over to the destroyer *Kagero*. This was

a fortunate move, for *Mutsuki* was sunk a short time later by a pattern of bombs dropped by a formation of Flying Fortresses out of Espiritu Santo.

This smash, grab, and run business went on day after day. The fighting on both sides was very bitter, as all who went through the Guadalcanal campaign will attest. On August 31 *Saratoga* collected another wound stripe. With *Wasp* and *Hornet* she had been patrolling the sea routes into Guadalcanal, and that evening after a day of stalking a persistent enemy submarine, the monotony of routine patrol activities was suddenly enlivened.

The submarine, I-26, had bided its time, made no attempt to pierce the destroyer screen, but had moved ahead and was sitting quietly at a position off *Saratoga's* bow. Knowing the risk of moving inside, the Japanese commander fired a spread of six torpedoes at the massive carrier. Captain Dewitt C. Ramsey caught a warning signal from the destroyer *MacDonough*, swung away hard, and called for top speed, but there just wasn't time to evade the full spread, and two torpedoes thumped into *Saratoga's* starboard side, abreast of the island. Twelve men, including Admiral Fletcher, were wounded, but none seriously. Only one fireroom was flooded, but her new electric propulsion units were shorted and it was some hours before the damage-control crew could give Captain Ramsey anywhere near thirteen knots. Later *Minneapolis* put a tow rope aboard, and, aided by a friendly southeast wind, Captain Ramsey launched all his planes and sent them to Henderson Field where they flew for some time with the Marine aviators there. *Saratoga* crept away and eventually made a Navy base at Tongatabu, a small island southeast of Fiji. She was not available for action for more than three months.

The invasion and counterinvasion of Guadalcanal was a dog-eat-dog affair. The Americans would win during the daylight hours, but at night the Japanese took over. Night after night, more troops were sneaked in, regardless of the sacrifice. There were bitter feelings throughout most American commands, since none attempted to appreciate the position or viewpoint of the other. The Navy did its best with what it had. The Marines fought with their traditional valor. The Army Air Force, learning as it went along, did what it could with what it had. Prejudiced journalists, beating the drum for their particular service, added little to public understanding or inter-service co-operation.

By the middle of September the situation on Guadalcanal was criti-

cal, despite the gallant efforts to hang on, and particularly to retain Henderson Field. On September 14 six transports, bearing the 7th Marine Regiment and its equipment, sailed from Espiritu Santo. There were plenty of enemy bases en route, but Guadalcanal had to be reinforced and Admiral Ghormley ordered *Hornet* and *Wasp* to furnish the escort. In order to do this properly the full task force had to steam out of sight of the transports to keep the knowledge of the reinforcement ships from the enemy until they were ready to land.

Admiral Kelly Turner's task force itself was snooped by noon of September 15 and he realized that the enemy had carriers north of Santa Cruz Islands, and land-based bombers on Rabaul and Bougainville. The snooper would unquestionably also alert the small fleet of Japanese submarines that were operating in all Solomon Islands waters. Turner wisely decided to retire and await a more favorable opportunity, but ordered the convoy to continue on its course. Contact was maintained by routine air patrols, and with a smidgin of luck the transports would have little trouble getting in and disembarking their troops.

The carriers, steaming on a westerly course, were about one hundred miles away. It was a beautiful day and as they swung now and then into southeasterly headings for take-offs and recoveries, there was little excitement, except the shooting down of a Japanese Kawanishi flying boat that had been first detected by radar while she was on a reconnaissance mission. There was no reason to believe she had spotted the U. S. task force, but all routine alert operations were carried out.

*Wasp* was handling the combat-air and antisubmarine patrols, and at 2:20 P.M. she eased down to launch and recover aircraft. A number of SBDs and Wildcats took off, and others returning from routine patrols were recovered. All this was observed by the Japanese submarine skipper of I-19, one of those that had been sent into the area to intercept the Marine transports. Up to then I-19 had evaded all destroyer search, and as Captain Forrest P. Sherman signaled for a turn back to her base course, lookouts spotted a number of torpedoes porpoising on the starboard side; they were coming on hot, straight and normal. Four torpedoes were fired and in spite of the quick rudder response, two warheads smacked *Wasp* hard.

Ensign John J. Mitchell, one of the survivors, endured a remarkable experience. He was in charge of a gun station at the time and had just been relieved by a seaman, a member of his gun crew. He remembers seeing the man squinting out to sea and then plucking at Mitchell's

arm in the best Nelsonian tradition and asking, "Hey, Mr. Mitchell, w'as 'at funny looking thing out there?"

Mitchell recognized it immediately and sounded an alarm and managed to squeak, "That's torpedo wake." His alarm was heard and *Wasp* began to turn and Mitchell started to move for the bridge. His plan was expedited, as they say in the services, for the next thing the ensign knew he was hoisted bodily, hurled through the air and deposited on an open section of the bridge.

"I held the world's record for an involuntary high jump—thirty feet high and sixty feet away," he explained later from a hospital cot. "They tell me I landed right at the feet of my superior officers on the bridge in a posture unbecoming *even* to an ensign. I was flat on my back!"

Mitchell was thought to be dead, but "the body" was removed from the bridge and strapped to a stretcher. Lieutenant Courtney Shands hauled the stretcher down a companionway, and across the flight deck under the storm of ammunition going up from the gun boxes of the burning aircraft. The stretcher was lashed to an aircraft raft and the package was launched. The top-heavy raft immediately rolled over with Mitchell strapped in the stretcher. Others came to the rescue, and in spite of the sea being infested with sharks, the raft and its load were righted and Mitchell eventually wound up safely in the hospital with only a broken leg.

The explosions from the two torpedoes, both on the starboard side, were terrific—not only against the armored walls of the hull—men, planes, tractors, and heavy equipment were hurled in all directions. Fully loaded planes that were on the flight and hangar decks were lifted bodily and dropped back with a smash that rammed their undercarriage legs up into the wings or cockpits. An engine-room switchboard was ripped out and flung across banks of generators. Fires broke out, and the resulting flames were carried to aircraft, fuel tanks, oil supplies. Huge tongues of fire licked at everything. In her initial convulsion *Wasp* broke all forward water mains, and when the ship took on a heavy starboard list, her decks canted wildly, and loose objects tore about like berserk juggernauts.

Providentially, most communications stayed secure and Captain Sherman could contact his damage control and the after-steering organization. He had the engines cut to ten knots, and put *Wasp* over full left to get the wind on her starboard bow. He then went into reverse to keep the fire away from her undamaged sections.

Quick damage control brought down the list to four degrees, and

electricians worked furiously to get the generators and switchboards in running order. All this had to be carried out to maintain *Wasp's* headway, otherwise smoke would have suffocated every man aboard.

While this work and heroism was going on, another Japanese submarine, I-15, that had been patrolling with I-19, fired a torpedo at *Hornet*. It missed the carrier, passed under the destroyer *Muster*, continued on and struck the battleship *North Carolina* forward on the port side about twenty feet below the waterline. Five men were killed as it ripped through and opened a gash thirty-two feet long and eighteen feet high. This resulted in flooding through four bulkheads, but after reasonable precautions were taken, this battlewagon maintained twenty-five knots, struggled back from a five-degree list, and maintained her station.

Matters were not so routine with *Wasp*. She was being gobbled by fierce fires and at 3 P.M. a tremendous explosion shook her from bow to stern, pumping clouds of deadly gas and smoke into all command areas. Admiral Noyes was blown from his post to the signal bridge. Most of the admiral's clothing was burned off, and he suffered bad body burns as well. Just as the bridge staff moved off to take stations at Battle Station II, well aft, another severe explosion billowed up from the hangar deck, hurled the Number 2 elevator high into the air and dropped it with a crash that left the platform crazily askew.

In spite of the terrible beating *Wasp* had taken there were still many men left alive on her forecastle. A number of officers and men who had been below never had a chance; they probably were blown to bits. Others who had lived through the initial battering were wiped off with heat, smoke, and lethal fumes. As the carrier wallowed uncertainly, asphyxiating gas rolled forward and forced many seamen to jump into the sea where sharks and burning gasoline left little in the way of an alternative. A few braver—or more desperate—men dove overboard, hissed through the flaming waters and swam under the sheet of fire until they could come out in clear water. Those who stayed aboard formed small groups and tried vainly to extinguish the flames, but there was no power and no water in the fire lines.

Every trick in the trade was tried to control the fires, but the raging volcano that was now the hangar deck, roared up the open elevators and ate everything before it. There was no choice but to abandon, and the order was given at 3:20 P.M. The wounded who could be moved were floated away on rafts or mattresses, and carpenters quickly hammered together any contrivance that would keep an injured man

afloat. Destroyers moved in and picked up what men they could, as they still tried to trace the submarine that had fired the torpedoes. At 9 P.M. that night three torpedoes from the destroyer *Lansdowne* sent the valiant *Wasp* to the bottom. Of the 2247 men on board 192 had been killed and 366 wounded. All but one of her twenty-five planes were flown off and landed aboard *Hornet*.

The continued struggle and strife for Guadalcanal, particularly for control of Henderson Field, reached something of an impasse by October 26. The Japanese bombardment force had received a wicked lashing from airmen at Henderson Field, and enemy ground forces had been repulsed at three major points, Matanikau, Hanneken's Ridge, and that entrancing piece of real estate known as Coffin Corner. The Japanese had suffered thousands of casualties, and the world knew by now that the U. S. Army and Marines could dish out as well as take the punishments of war.

Then, as the thud and crash of land action slowed down, the navies of both sides took up the cudgels and staged what is known as the Battle of Santa Cruz Islands. It was here that we lost another carrier; *Hornet* went to the block.

In spite of the setbacks his auxiliaries and invasion forces had sustained, Admiral Yamamoto still had four carriers, five battleships, fourteen cruisers, and forty-four destroyers with which to fight. Admiral Halsey's *Enterprise* and *Hornet*, heading up Task Forces 16 and 17, had only the battleship *South Dakota*, and nine cruisers, screened by about a dozen destroyers. The *South Dakota*, a brand new battlewagon, was commanded by Captain Thomas L. Gatch, who had built up a reputation of being the finest leader in the U. S. Navy. Captain Gatch, a weird mixture of religious piety and shipboard slovenliness, wielded a strange power over his men. He was forever reading the Scriptures, spreading the confidence that comes with religion. He allowed his crew to wear anything, or nothing, and had only contempt for the theory of a taut spick-and-span ship. "I want men who can shoot and fight, not holystone heroes," he would say. "We can clean up the ship and put on our best duds just before we go into port on liberty." As a result he was practically worshiped by his staff and men.

On October 24 Admiral Halsey ordered the two task forces, and a battle-cruiser group known as TF 64, under Rear Admiral Willis A. Lee, Jr., to rendezvous at a point about 273 miles northeast of Espiritu Santo, with orders to make a sweep north of the Santa Cruz Islands,



and then to almost reverse that course to the southwest with the idea of intercepting any enemy vessels that were heading for Guadalcanal.

At the same time Admiral Yamamoto laid it on the line to Admiral Kondo, and added that Henderson Field was to be in Japanese hands by the evening of that date, October 24. At least, that is what he told his Army opposite-numbers, explaining that unless the American warplanes there were neutralized, his fleet would not be able to stay any longer in those waters. The Japanese Army, unfortunately, was not able to oblige, and, although many boastful statements were made over the Nippon radio, Henderson Field remained in the hands of the U. S. Marines.

This left Admiral Kondo bewildered. On the one hand he was told he had nothing to fear, but reading between the lines he felt that U. S. warplanes were still on the Guadalcanal airstrip. In this state of indecision he moved his four-carrier force up and down in an area three hundred miles north of Guadalcanal. On shore Japanese liaison officers explained that the taking of the airfield had been delayed temporarily because of the difficulty of the terrain, but everyone had high hopes that the base would be in Japanese hands by midday of October 25. All this intelligence was interesting, but Admiral Kondo still had no idea where Admiral Halsey's two carriers were.

While Kondo gnawed his cuticle, the American force was steaming on their run around Santa Cruz Archipelago, which is north of the New Hebrides and to the east of the southern Solomons, with full knowledge of the Japanese force, since a PBY had sighted two enemy carriers at noon of October 25, about 360 miles from the U. S. Fleet. At this point Rear Admiral Thomas C. Kinkaid, commander of Task Force 16, decided on a combined search and strike; his search aircraft left *Enterprise* at 1:30 P.M., and the striking force left at 2:20. Nothing much came of this for the snooping PBY had alarmed Kondo who ordered a reversed course to the north. Admiral Kinkaid's planes, which returned after dark, met bad luck; one crashed on the flight deck, and six others were lost when they landed in the water, indicating that American carrier pilots were still not especially adept at night-flying operations.

All through October 25 Catalinas and Flying Forts made contact with Kondo and even went after his battleships. No hits were established, although early that morning two Catalinas, carrying torpedoes and bombs, came close to seriously damaging the carrier *Zuikaku* and the destroyer *Isokaze*.

Putting together what meager information he had Admiral Yamamoto ordered the Army to storm the airfield that night, explaining that he fully expected a critical engagement with the American Fleet in waters northeast of the Solomons. Both sides had spent every available minute in seeking out the other, and shortly after midnight one of the Catalina snoopers had picked up the scent, and later another PBY confirmed that Kondo's force was less than two hundred miles away. This information was delayed in reaching Admiral Fitch's headquarters, but when it did arrive and was fully confirmed by 5:30 the morning of October 26, Admiral Halsey gave the order: "Attack—Repeat—Attack!"

The morning promised a fair day. A light eight-knot breeze gently stirred the waters, and above cumulus was spotted about the sky. Perfect conditions for dive-bomber pilots.

A light formation was sent off from *Enterprise* to search definite sectors. In this group were Lieutenant Stockton B. Strong and Ensign Charles B. Irvine who were aboard SBDs that carried bombs. They found nothing in their assigned area, but overheard a report of business elsewhere and turned off and found Nagumo's carriers. They sneaked in undetected, went down with no opposition of any kind and planted two bombs on the carrier *Zuiho's* stern. This was a most fortunate attack, for one of the bombs opened a hole fifty feet wide in the flight deck, canceling flight operations, and at the same time blasting away all aft antiaircraft batteries. The Japanese combat air patrol dove on the SBDs as they pulled out of their attack dives, but the rear gunners in the SBDs shot down two of the Zekes.

The Japanese fleet staff also learned of the whereabouts of Admiral Kinkaid's ships for one of their float planes sighted *Hornet* at 6:30 that morning. Nagumo had more than sixty planes spotted for take-off aboard his three carriers, *Shokaku*, *Zuikaku*, and *Zuiho*. Fortunately, the planes on the latter had been flown off before Lieutenant Strong and Ensign Irvine plugged her deck. This attack formation was sent off at 6:58 A.M., and another element of forty-four aircraft was readied to follow.

At the other end of the board, American planes were more than twenty minutes behind their enemies in getting aircraft off, but at 7:30 Lieutenant Commander William J. Widhelm led fifteen dive bomber SBDs, six Avenger torpedo planes, and eight Wildcats off *Hornet*. Thirty minutes later *Enterprise* launched nineteen aircraft under Lieutenant Commander Richard K. Gains. At 8:05 Com-

mander Walter F. Rodee led twenty-five planes of varying types off *Hornet's* deck, which brought the full force of American strike planes to seventy-three. The two opposing forces passed each other, each eying the other and probably wondering which would have a flight deck to return to.

This is not to say that they waved as they went by. A formation of *Zekes* went down on the smaller *Enterprise* element, making clever attacks out of the sun. Three Wildcats were shot down into the sea, while a fourth was badly damaged. With these fighters out of the way, the *Zekes* went for the torpedo planes and repeated their score but lost two planes and pilots in the venture. The four remaining Wildcats staged a heroic stand and drove off the enemy after shooting down at least one more. It will be noted that the *Enterprise* formation was cut almost in half when it was still one hundred miles from the target. However, the fracas did serve as an early-warning message to both *Hornet* and *Enterprise*.

Admirals Kondo and Kinkaid must have been enduring the same pre-action pains. Each knew the other was fencing for him, and that their naval fortunes lay in the hands of Lady Luck. Kinkaid had one strike against him in that the fighter-director aboard *Enterprise* was new to his job, since the man who had served so well in the Midway conflict had joined Admiral Halsey's staff at Nouméa, New Caledonia.

The Japanese attacking force went into action first, of course, and at 8:57 the U. S. combat-air patrol spotted the enemy Vals—Aichi 99-1s—coming in from seventeen thousand feet. Because of our failure to interpret the radar screen blips, since there were so many aircraft in the air at the time, the dive bombers were not completely identified until they were well within ten miles of the carriers. This was too close to allow for deliberate action and by the time Wildcat air patrols could sort out the various formations, small parties of Vals were swooping down on *Hornet*. Some were destroyed before they could release their bombs, but the enemy kept working in this manner, making the most of the bewildering radar situation, and eventually darting in from every angle.

At 9 A.M. *Enterprise* slipped into a local rain squall, but *Hornet* was well out in the clear, and the enemy planes concentrated on her. The sky above was a tangle of action. Wildcats were trying to head off small parties of Vals. *Zekes* were slipping in and out, picking off fighter pilots who were engrossed in their defense duties. Other small wads of bombers or fighters curled in and out, looking for a dive

position or a target to knock down. The surface ships spattered the sky with antiaircraft shells with some success—but not enough.

A bomb came out of nowhere and clipped the starboard side of *Hornet's* flight deck. Following this, a Japanese squadron leader who had been badly hit and his plane damaged, managed a kamikaze, struck the smokestack, glanced off, and ripped through the flight deck, after which two of his bombs exploded and strewed destruction in all directions. In the middle of this confusion torpedo-carrying Kates—Nakajima 97-2s—came in astern, flying very low, and put two tin fish deep into *Hornet's* battered hull. These exploded in the engineering spaces and brought the carrier to a halt. Smoke and steam combined to cause hell in all directions. The kamikaze shot had taken out most communications, and as *Hornet* wallowed drunkenly three more 1500-pound bombs caught the flight deck. One of these bored all the way through to the fourth deck before letting go, and another plowed through four deck levels to the forward messing area before its delayed action fuse touched it off. Words are not necessary to heighten the imagination.

But all this was not enough. While afire, adrift, listing, and completely helpless, another suicide pilot in a damaged Kate piled into *Hornet* on the port forward-gun gallery and blew up near the elevator shaft. Twenty-seven enemy aircraft had attacked *Hornet*, and although about twenty-five had been shot down or badly damaged, they had done their work.

The fire menace was serious, but not such as to deter a good combat-control officer. There was no power for pumps, and bucket brigades had to be formed, and crews with carbon-dioxide extinguishers and Foamite went to work. The destroyers *Russell* and *Morris* moved alongside and supplied some measure of hose and pump power and by ten o'clock the fires seemed to be losing ground. The black gang decided that three of *Hornet's* boilers might produce steam, and gave it a try. The cruiser *Northampton* put a tow aboard and started to haul her away. At that instant a single Val roared out of the sky and whanged another bomb that missed *Hornet* but broke up the towing and pumping operations.

While the heroic action was going on around *Hornet* a Japanese submarine started popping off torpedoes; one hit the destroyer *Porter* which was on a mercy mission picking up air crews. She had to be abandoned and sunk, but her survivors were put aboard the destroyer *Shaw*.

The lone Val that had attacked *Hornet* was one of an element that had taken off from *Zuikaku* and *Shokaku* at 8:22 and either had not seen *Enterprise*, or had ignored her. Later, however, a force dared the heavy antiaircraft fire put up by *San Juan* and *South Dakota*, which were protecting the "Big E", but eventually one bomb caught *Enterprise's* flight deck close to the bow, bored fifty feet through the fore-castle and out the ship's side before exploding. A parked aircraft was fanned over the side, taking with it a sailor, S. D. Presley, who had been standing in the rear cockpit flailing away with a machine gun at anything that roared past. Available records do not disclose whether this gallant man was rescued.

During all this excitement an unbelievable incident occurred. A second bomb crashed near the forward elevator. This one mysteriously broke in two parts, one half exploded at deck level, while the other bored its way through to the third deck causing a second explosion that killed or wounded many men and ignited several small fires. Still a third bomb, a near miss, was close enough to buckle numerous plates along the starboard side, and is believed to have damaged a turbine bearing.

While *Enterprise's* repair gangs went to work and corpsmen were caring for seventy-five wounded men, Lieutenant S. W. Vejtasa, who was leading a formation of Wildcats, stood by waiting for any enemy torpedo planes to turn up. He had already shot down three during the attack on *Hornet*, and, as he expected, eleven sea-green Kates roared up from the south. Lieutenant Vejtasa knew his job and skillfully led his pack into the raiders. Before their ammunition had been expended they had shot down six Kates.

Even this was not enough, for more than a dozen others waited their turn out on the periphery of the engagement, and when they moved in *Enterprise* became their main attraction. The antiaircraft gunners, using high speed 40-mm. Bofors, mounted four to a bracket, took five of these out of the play, but nine others squirmed through the defenses and dropped five torpedoes to starboard and four to port. Warned of the starboard attack, Captain Osborne B. Hardison brought *Enterprise* hard right. Another quick turn dodged a fourth torpedo that missed by less than one hundred feet.

One Kate pilot, evidently enraged by the elusive tactics of the carrier, and the torrent of antiaircraft fire, made a suicide attack, bashing himself, his plane, and his torpedo smack into the fore-castle of the destroyer *Smith*. A horrible fire resulted, but Lieutenant Commander

Hunter Wood, with the aid of Chief Quartermaster F. Riduka, ran *Smith* up under the quarter of *South Dakota* where the battleship's crew provided fire-foam that helped to quench the blaze.

While this was going on, although she had twenty-eight dead and twenty-three wounded scattered about her decks, *Smith's* antiaircraft gunners, true to their trust, continued to fire on any plane seen heading for the wounded *Enterprise*.

The "Big E" fought fires, mechanical damage, and enemy aircraft, but Lady Luck finally relented and moved heavy cloud cover into the area. It could have sheltered enemy raiders, but at the same time the carrier could use it for her own salvation.

It was a tense situation, no matter how it was viewed, for by now planes from both carriers were reaching the end of their range, and pilots were begging for permission to come in and refuel and rearm. The deck crews aboard *Enterprise* were working at top speed to clear an area large enough to land a plane on. It was at this point that some alert lookout spotted a submarine's periscope. Another, handling the radar aboard *South Dakota*, picked up a suspicious gathering of aircraft, and with the routine warning, every antiaircraft gun in the force opened up—carefully selecting six fuel-hungry SBDs that were waiting to land aboard *Enterprise*. The U. S. dive bombers "got the hell out of there, fast," and moved off until some of the confusion below had subsided.

At 11:21 a formation of twenty-nine planes off the Japanese carrier *Junyo* came pouring down out of the cloud cover above. Since the clouds were low there was little visual space to permit much selection, and the enemy pilots had to take what they encountered. This also allowed the American gunners a chance to pick them off as they floundered about looking for a target, and in less than two minutes eight of the raiders were shot down. One of these did manage a near miss against *Enterprise* that buckled a few more hull plates.

But as usual, the law of compensation took over, and at 11:27 stragglers from this strike formed up, broke out into the open, and attacked *South Dakota* and *San Juan*. One 250-pounder smacked into the battleship's Number 1 gun turret, doing little harm, but a shell splinter from the casing struck Captain Thomas L. Gatch in the neck. When Captain Gatch went down, someone switched the steering control to the executive officer's station aft, upon which the telephone system fouled up and for a minute or so *South Dakota* ran wild and almost steamed into poor old *Enterprise*. Her crew was alert, how-

ever, and quick action hauled "Big E" out of the way. The bomb that hit the battleship killed one man and wounded fifty others.

The antiaircraft cruiser *San Juan* was hit by an armor-piercing bomb that bored all the way through and out the ship's bottom before the igniter went off. The explosion under water jammed the rudder hard right, and with that *San Juan* began to run in crazy maneuvers, pulling tight spirals, heeling over hard and just missing other ships as every gun aboard continued to spit at the enemy. Hanging on the whistle, and with the "breakdown" flag streaming, Captain James E. Maher finally managed to get *San Juan* under control. The cruiser *Porter* also fouled her steering gear and went into dizzy turns for a few seconds but her trouble was soon corrected and she did no damage.

With the last of the enemy planes either being driven off or "splashed," *Enterprise* finally turned into the wind to recover aircraft, although, because of the congestion, a dozen SBDs had to be flown to a strip outside Espiritu Santo. At 2 P.M. she managed to launch a new combat air patrol and pull out of the battle area.

About 11:30 *Hornet* showed signs of recovery and *Northampton* finally took up the slack on her towline. The carrier was actually under way for a time and then the inch-and-three-quarter steel towing cable parted. A two-inch cable was then attached and this held well enough to provide about three knots by 1:30 P.M. Admiral Murray transferred over to *Pensacola* and Captain Charles P. Mason ordered all wounded, who were collected on the fantail, and nonessential men to be transferred to the destroyers *Russell* and *Hughes*.

At 3:15 six torpedo planes came in unmolested, simply because there were no fighters available to provide cover, and *Northampton* had to slip the tow since she was a sitting-duck target while hauling *Hornet's* hulk. Another antiaircraft cruiser *Juneau*, should have been available, but she had misunderstood a signal and had roared off to support Admiral Kinkaid's group; her sixteen five-inch guns could have provided the defense. *Hornet* was now an easy target but only one torpedo hit her. Commander E. P. Creehan, her engineer officer, was on the third deck, port side, above the aviation storeroom and related later what happened:

"I saw a sickly green flash that momentarily lighted the scullery department and seemed to run both forward toward Repair Station 5, and aft into the scullery department for about fifty feet. This was preceded by a thud so deceptive as to almost make one believe that the torpedo had struck on the other side. Immediately following the flash,

a hissing sound of escaping air was heard, followed by a dull rumbling noise. The deck on the port side seemed to crack wide open and a geyser of fuel oil, which quickly reached a depth of two feet, swept all personnel at Repair 5 off their feet and flung them headlong down the sloping decks of the compartment to the starboard side. Floundering around in the oil, all somehow gained their feet and a hand-chain was formed to the two-way ladder and escape scuttle leading from the third deck to the second deck. All managed to escape in some amazing fashion through this scuttle, and presented a sorry appearance upon reaching the hangar deck."

*Hornet* was in a bad shape by now, her engine room was flooding, her starboard list had gone to fourteen degrees, and although her gunners still available fought bravely, Captain Mason decided to have his crew stand by to abandon ship.

At 3:40 more Japanese dive bombers appeared overhead but scored no direct hits. The antiaircraft gunners had no luck either. Ten minutes later six Kates, flying a ceremonial V formation came in and *Hornet* received another hit on the starboard corner of the flight deck. The dreary business of abandoning ship was then begun.

Admiral Nagumo's fliers made their last run at the hulk at 5:02 that afternoon, when six fighters and four dive bombers flew over and made one hit that started a new fire on the empty hangar deck. The destroyers then raced back again and took off the rest of the survivors. By that time 111 men had been killed and 108 wounded, and there was no alternative but to scuttle the remains and clear out. The destroyer *Mustin* fired eight torpedoes in unhindered succession but only three hits were scored and *Hornet* refused to go down. This mournful business was continued until 1:35 in the afternoon of the next day. Every U. S. ship that could fire a gun was brought in and more than 430 rounds were put into her before she went down.

There, of course, is another side to the Battle of Santa Cruz Islands. While the enemy were getting in the first licks against *Hornet*, fifty-two planes of her air group, led by Lieutenant Commander William J. Widhelm were approaching the Japanese force. He had fifteen dive bombers and four fighters in the front element which sighted enemy cruisers and some destroyers at 9:15 that morning. A few minutes later they passed to the east of Admiral Kondo's Advance Force, of which the carrier *Junyo* was a part. Enemy combat-air patrols tried to head off Widhelm, but he got through although two of his Wildcats were



shot down. At 9:30 he came upon *Shokaku* and *Zuiho*, the latter still smoking from the hits made by Lieutenant Strong and Ensign Irvine.

Another heavy air-combat patrol closed in and Widhelm's SBD was hit. He tried to continue on, but the damage was heavy and Widhelm had to ditch. He and his gunner took to their raft, floated about, and calmly took notes. His command was assumed by Lieutenant James E. Vose who had only eleven planes left to carry out the job. They all pulled a tight bead on *Shokaku*, and roared down through the curtains of flak, with Zekes snapping at their tails. It was risky, and almost hopeless, but the gamble paid off. Several 1000-pound bombs caught the carrier's flight deck and ripped it to shreds, the hangars below went up in flames, and everything within was scorched to a crisp. Fires spread everywhere and gunnery control was obliterated—*Shokaku* was out of action for nine months. Had Lieutenant Vose had a few torpedo planes, *Shokaku* might have been sent to the bottom. The Avengers, unfortunately, had become separated from the dive-bomber force, since they had missed Widhelm's message concerning the position of Nagumo's carriers, and as a result the torpedo bombers made an ineffectual strike at one of Admiral Abe's cruisers.

The second wave of aircraft to leave *Hornet* that eventful morning also missed the main carriers, and after a fruitless search, Lieutenant John J. Lynch took his SBDs against the cruiser *Chikuma*. Two bomb hits were scored, but although she was knocked out of the fight, the cruiser crawled home. At the same time a strike force off *Enterprise* had a hard time at the hands of enemy fighters, and was broken up into two small elements. Three dive bombers went after the battleship *Kirishima*, with no luck, and four torpedo bombers hurriedly launched their "fish" at a heavy cruiser, but all missed.

This was the total of American effort when the last of the American planes pulled out by 9:27 A.M. At the same time the Japanese knew that they had set *Hornet* afire, and learned that there was still another American carrier available. We have seen how close they came to destroying two of Admiral Kinkaid's flat-tops. Measured in combat tonnage, the Japanese had won a tactical victory, but, according to Admiral Nimitz, other losses had forced them back to their Truk hide-out. Kinkaid's force moved southward during the night of October 26-27 and en route *South Dakota* and *Mahan* collided while making evasive tactics against an enemy submarine contact. The damages were such that for a time it was believed that *South Dakota* would have to return to the United States for repairs. *Enterprise* was patched up and

remained with the force and took part in the Battle of Guadalcanal—sometimes called the Battle of the Solomons—that was fought over November 12–15.

The Battle of Santa Cruz, the fourth carrier battle in six months, disclosed that something of a pattern had been established. Very little that was new had been added, but at the same time there was considerable criticism of the fighter-direction efficiency. American fighter-plane technique had improved greatly, as had the gunnery provided by the new 40-mm. antiaircraft weapons. So far, the Japanese had shown superior efficiency in torpedo attack and long-range search, but most important, the Battle of Santa Cruz gained some valuable time for Admiral Nimitz—days in which to check mistakes, reinforce, and prepare.

The indecisive results at Santa Cruz left the Guadalcanal situation more frustrating than before. Admiral Halsey at Nouméa faced the prospect of stepping up the movement of supplies and reinforcements in order to hold the island, while Admiral Yamamoto at Truk was equally determined to push the Americans out of their foothold in the Solomons. Halsey's job was to move in troops and supplies over airways and sea lanes while Yamamoto relied on a somewhat similar schedule of interdependent troop and ship movements. It will be seen that such operations, if they were to succeed for either side, could only result in one crucial and decisive naval engagement that would bring a definite decision.

In the days following the carrier battle, both sides nibbled and thrust. The Japanese continued to sneak in additional troops at various beaches and U. S. Navy vessels shelled their positions. More Japs crawled into Koli Point east of the American lines, and U. S. Marines had to attack and attack until this enemy force was annihilated. Between November 2–10 some sixty-five destroyer loads of Japanese troops were off-loaded in western Guadalcanal, another addition to the build-up that threatened the American position.

Bitter skirmishes occurred hour after hour in Ironbottom Sound. *Majaba*, a Navy cargo ship, was torpedoed by a Japanese submarine, the destroyer *Lansdowne* went in search of the sub and wound up shelling Japanese shore positions east of Metapone River, PT boats out of Tulagi raced up and down and the Japanese destroyer *Mochizuki* was torpedoed but not sunk, the minesweeper *Southard* found

and sank submarine I-172 off Cape Recherché, San Cristobal Island, south of Guadalcanal.

When a large force of reinforcements stood off waiting to move into Guadalcanal, U. S. intelligence reports indicated that Truk, Rabaul, and the Shortlands were glutted with enemy shipping—a warning that a new heavy thrust might be expected at any moment. Admiral Halsey realized that if he hoped to get the reinforcements in and prevent Admiral Yamamoto from doing the same, he would have to put what was left of Task Force 16 into action at the first opportunity. Since “Big E” was under repair at Nouméa, the battleships and four destroyers had to be detached for the job.

At Truk, Admiral Kondo had two light carriers, four battleships, eleven cruisers, and more than thirty submarines to cover his high-speed transports that were poised for a quick dash in with men and supplies by November 14. He planned to bombard Henderson Field the night before, and it was obvious that Admiral Kondo realized that his task would not be easy.

As the U. S. reinforcements headed out of San Cristobal they were spotted by an aircraft that had been launched from an I-class submarine. It was clear that this snooper's report would result in trouble, so everything was rushed into the waters off Lunga Point north of Henderson Field, and the Marines quickly off-loaded. This activity was interrupted by a dive-bomber force from the carrier *Hiyo*, but an alert coastwatcher and radar gave ample warning and the enemy Vals were given a hot reception. This continued all through November 11–12; bombs were dropped on Henderson Field, and search parties went looking for Admiral Kondo's fleet, but not until early afternoon of November 12 was the information sent by a coastwatcher that Japanese bombers and fighters were on their way.

Admiral Richmond K. Turner who was in charge of this bob-tailed organization, now known as Task Force 67—the transport group of this South Pacific Force—quickly halted the unloading, pulled his transports out of the limited waters, and set up parallel lines of ships that were to be guarded by the antiaircraft weapons of the various warships. They all headed toward Savo Island, and as a result the enemy planes were badly beaten up, and only one U. S. destroyer received any serious damage. The cruiser *San Francisco* had a suicide plane land on its after-control station, wounding fifty men. All this was followed by a tense calm.

Early the next morning intelligence indicated that a strong Japanese

force was steaming in some 335 miles to the northwest, and another was spotted two hundred miles to north-northwest. By midafternoon two carriers and two destroyers were seen only 265 miles away, and since none of these forces was escorting transports, it was clear that the enemy was heading for Guadalcanal with intent either to blast Henderson off the map, or to engage any U. S. Navy fleet available. Admiral Kinkaid's carrier-battleship force was too far away to offer any hope of assistance.

Admiral Daniel J. Callaghan, in command of the Support Group that had included *San Francisco*, had only four cruisers and a respectable force of destroyers to use in getting the cargo ships away. From this point on what began as a surface action, soon went into the most savage sea engagement since the Battle of Jutland in 1916. Through November 12-13 both sides lost heavily, but although it cost him his life Admiral Callaghan succeeded in holding Admiral Abe's raiding group and saved Henderson Field.

On the morning of November 13 Admiral Kinkaid's Task Force 16, with the partially repaired *Enterprise*, was racing up from Nouméa. On the way fitters and welders continued the refit work but when the "Big E" was 340 miles from Guadalcanal the forward elevator still refused to function. However, *Enterprise* launched a ten-plane search and an attack group was prepared, in case some of the Japanese war vessels should be within range. Admiral Kinkaid then donated a few of his carrier aircraft to the Henderson Field force since *Enterprise* could not handle too many in an efficient manner.

A small element of these transferred planes came upon the Japanese *Hiei*, the battleship that had been damaged the day before. She was north of Savo Island and accompanied by several destroyers. Lieutenant John F. Sutherland, with a number of Avengers, made runs on both bows, scored two torpedo hits and escaped unscathed. One of these hits disabled the rudder and *Hiei* began to run in wild circles, but even this did not send her down, so Lieutenant Sutherland led his element to Henderson Field, there rearmed, and, accompanied by eight Marine SBDs and two additional fighters, returned to finish the job.

This time the Avengers launched five torpedoes from a ninety-degree angle when *Hiei* was almost stationary. Two bounced off without exploding, a third ran out of control, but the last two hit clean

and exploded. The battlewagon still refused to go down although by now she was a dead hulk in the water and utterly useless.

Next, fourteen B-17s flew up from Espiritu Santo, and dropped fifty-six bombs—only one hit *Hiei*. She was abandoned eventually, and her crew removed as she was sinking stern first about five miles off Savo Island.

*Enterprise* was kept out of the heat of the Guadalcanal fight as much as possible; the slugging was left to the battleships and available land-based aircraft. However, on November 14 when she was two hundred miles south-southwest of Guadalcanal two of her search planes reported sighting ten unidentified planes about 140 miles to the northward that were heading toward the carrier. Captain Hardison launched an attack group for a look-see and to nail some rewarding target, if possible. They were scarcely off the deck when a new report came through: "Two battleships, two heavy cruisers, one possible converted carrier, and four destroyers." Their position was ominous, but later the group, under Admiral Gunichi Mikawa's command, proved to be retiring to the southward in a somewhat disorganized state.

Lieutenant Commander James R. Lee, who was leading the *Enterprise* flight sent out to intercept this enemy formation, made a contact by 9:50 A.M. and thoroughly searched to find a carrier, but had to be content with a number of cruisers. His dive bombers scored two direct hits on *Kinugasa* and a near miss ruptured hull plates, opening a large gasoline tank and starting a bad fire. A short time later this cruiser listed sharply and went to the bottom. Other heavy cruisers, *Chokai* and *Maya*, the light cruiser *Isuzu*, and a destroyer *Michishio* were heavily damaged, but reached the safety of Shortland Island.

In the meantime Admiral Tanaka's reinforcement ships, which were well escorted, were steaming down what was known as The Slot, the waters leading down between Choiseul-Santa Isabel and the New Georgia Group, making a beeline for the Henderson Field area. This formation was spotted at 7 A.M. and identified thirty minutes later, but it was not until 8:30 that they were found for business purposes by two SBDs off *Enterprise*. They picked out a large troop transport and made a near miss and a probable hit. In turn they were set upon by a unit of Zekes that had taken off from the carrier *Hiyo*, and one SBD was shot down but the other escaped and returned safely to *Enterprise*.

Aircraft based on Guadalcanal were fully alerted to the transport force and went out in mixed groups for the rest of the day and harassed

the Japanese troopships. This set up many aerial skirmishes that had various results. At 1:10 P.M. eight dive bombers off *Enterprise*, escorted by twelve Wildcats, went in search of the enemy transport group, then about sixty miles northwest of Savo Island. They found it by 3:30 just as Admiral Tanaka was attempting to re-form his force after earlier attacks. There were few enemy fighters in the sky so the SBDs took their time and made precision runs from fifteen thousand feet. Some good hits were registered and the fighters, following them down in escort formation, made the most of their chances and wiped off the enemy decks with machine-gun fire. They then headed off and landed safely at Henderson Field.

Despite all these varied attacks and subsequent damage, Admiral Tanaka decided on a bold move. He moved in eleven destroyers for a close formation and placed what transports he had left—about six—inside the destroyer screen, and doggedly continued down The Slot. A good-sized element of Zekes was mustered, and the original plan was continued.

Admiral Tanaka had a point. He must have known that his enemy could not continue to fly and fight all day long, no matter what slaughter they had wrought. There is a limit to any man's stamina and skill. Thus, when Lieutenant Commander James A. Thomas of *Enterprise's* Bomber Ten outfit took off again from Henderson Field, there was no available fighter escort. Seven SBDs went out and three were knocked down quickly by Zekes, two others were damaged, and the two that remained to pierce the destroyer ack-ack curtain were considerably hindered, to say the least. Little was accomplished, but before nightfall two Marine flights were flagged off Henderson Field, and before the day was over Admiral Tanaka had to admit to the loss by American air attack of seven transports, with their supplies and most of the troops they carried.

He now had four transports and eleven destroyers with which to continue his race toward Guadalcanal. With only eighteen fighter aircraft on board, *Enterprise* moved to the cover of a weather front south of Guadalcanal, and the next day was ordered back to the comparative safety of Espiritu Santo. The battle for Guadalcanal was left to the surface Navy, land-based aircraft at Henderson Field, and the Marine ground sloggers. No American carrier took any part in the historic naval conflict fought during the night of November 14-15—that joust of the giants that resulted in the complete consolidation of the island

and an assurance that American ground forces were at last on the offensive.

The world will long remember the savage land fighting that continued over the next nine or ten weeks. The name Guadalcanal made us all cringe and shiver, regardless of the nibbles of success that our ground forces experienced, and it was not until late January 1943 that it became obvious that the Japanese would have to evacuate what small portion of the island they still retained. Our best minds believed that the enemy would start moving out by April 1, but reconnaissance reports indicated an ever-increasing number of Japanese transports gathering at Rabaul, and Buin in southern Bougainville. At the same time carriers, battleships, and their required screens, were noted in various movements near Ontong Java, north of Guadalcanal. To some authorities this indicated a move out, but the staff at Pearl Harbor and Nouméa believed that the Japanese were planning another reinforcement.

Plans were made, therefore, to relieve and reinforce the Marines on the island, the ingoing transports to be escorted by five separate task forces in the hope that Admiral Yamamoto would accept the challenge. Three groups of this force never got into the resulting action, but *Enterprise*, now completely repaired and under command of Rear Admiral Forrest P. Sherman, did take part. "Big E" somehow managed to get into every scuffle.

On the afternoon of January 29 Task Force 18, now under Rear Admiral Robert C. Giffin aboard *Wichita*, started to rendezvous with the transport group at a point fifteen miles off Cape Hunter on the southwest coast of Guadalcanal. After that Admiral Giffin planned to make contact with a four-destroyer force, and then while the transports were off-loading at Lunga Point, Task Force 18 would turn up Ironbottom Sound and make for The Slot.

Admiral Giffin had two light, or escort, carriers, *Suwannee* and *Chenango*, each carrying a small element of Wildcats and torpedo or dive bombers. These vessels were converted oilers, comparable to the earlier British *Audacity*-class ships. It should be explained that Admiral Giffin who had had some experience in the Mediterranean and had considerable respect for submarines was not fully appreciative of the value of carrier aircraft as they were being employed in the Pacific. And therefore when it was apparent that he would have to put on about twenty-four knots to make his rendezvous, he dropped off *Su-*

wannee and *Chenango* and two screen destroyers, considering them nothing but "his ball-and-chain." That afternoon he was warned of submarines in his area, so he put on more speed to join the destroyer group, presuming that what air cover he needed would be supplied by planes that were based on Henderson Field.

At the same time, well aware of Admiral Giffin's movements through their submarines, the Japanese alerted attack aircraft on Munda Field, Baku, New Georgia, and possibly at Rabaul. Thirty-one twin-engined Betty bombers took off late that afternoon when Task Force 18 was fifty miles north of Rennell Island and steaming northwesterly. By sunset Admiral Giffin's radars were showing "bogies" some sixty miles to the westward. Unfortunately, Giffin did not order a change of course, nor did he alert his ships for an air attack; in fact most ships of the fleet had secured from dusk General Quarters and were totally unprepared for any such emergency.

Moving out of the area of the twilight glow, the Japanese air commander moved around to the south and split his bomber force into two parties. They came in low and fast and the lead Betty pumped a torpedo at the destroyer *Waller*, another was aimed at *Wichita*, a heavy cruiser, and a third torpedo bomber roared between *Chicago* and *Wichita* and launched a torpedo at *Louisville*, but this cruiser wriggled clear. Over the next few minutes the Japanese torpedo planes threaded in and out like great bobbins weaving a war tapestry. The antiaircraft gunners, alerted at last, mounted every weapon available, adding silver, gold, saffron, sable, and gray to the pattern. One Betty, broken in flight, splashed in a blossom of flame and green-white sea water. Miraculously, no damage was done to any vessel, and Admiral Giffin continued on, doggedly pursuing the same course and by 7:30 P.M. had given up zigzagging. His idea was to make his rendezvous on time, and to hell with the air torpedoes.

The Japanese, however, had had a taste of the kind of action that appealed to them; here was a large juicy task force with no air cover. As the twilight eased into the folds of night they came back—and brought their illumination with them. Blinding white flares blossomed on the water, yellowish flares, dangling from small parachutes, hung over the task force, strange red and green lights appeared in the sky that enticed antiaircraft gunners to waste belts and chargers of ammunition since there were no enemy aircraft between the lights. Actually, they were other parachute flares that scout planes dropped to mark



the general position, course, and formation pattern of the American force. Here was something new!

At 7:31 an element of torpedo bombers made their formal call. The leader released a tin fish that only missed the heavy cruiser *Chicago* by inches. *Louisville* stopped one, but, gratefully, it failed to explode. At this point U. S. Navy antiaircraft gunners tried out the new Mark-32 proximity fuse shell. This did not require the usual mechanical timing; if it passed close enough to the target, a small electronic device was activated by impulses rebounding off the target's surface, detonating the shell. As small and complicated as it was, this device appeared to work most efficiently as several Bettys were shot down.

The Japanese ignored their losses and came back. One tight element made a concerted run against the cruiser column and ran into wicked antiaircraft fire. Another was shot down, a second caught fire and its pilot probably made a kamikaze run for the torpedo bomber bounced off *Chicago's* port bow, spewing flaming gasoline all over the vessel. This provided brilliant illumination and two Bettys came in for a one-two punch. At 7:45 P.M. one torpedo smacked in, pierced *Chicago's* starboard side and ruptured two important compartments that flooded immediately. The aftermost fireroom began to fill up, three of the four shafts ground to a halt, control of the rudder from the bridge was hacked away, and in a few minutes a second torpedo bored another hole that flooded Number 3 fireroom, taking out the fourth drive shaft—and then there were none.

Captain Ralph O. Davis realized that his chances of saving the cruiser were minimal, but he roused his damage-control forces to their utmost. All around her antiaircraft gunners were blazing away and taking a grim toll, but with the eruption of each five-inch gun everyone aboard was blinded temporarily by the intense glare. No one thought to put on a screen of protective smoke, and the wild air-sea battle continued until the radarscopes looked like disturbed wasps' nests. Not until after 8 P.M. when U. S. gunners were ordered to fire only on definite targets, and the force had turned some 120 degrees and slowed to douse the glare of phosphorescent wake, did the enemy aircraft give up and return to their bases.

Two of the fires aboard *Chicago* were soon doused, and the damage-control parties went to work shoring bulkheads, counterflooding, and getting water out of living compartments by bucket brigades. The emergency generators were undamaged so that the workers at least had light and power, but the cruiser still had an eleven-degree list

and was hanging low by the stern. It was apparent that the only way to save her was to tow her out of the shore-based plane range. A tow line was passed from *Louisville* and, working in total darkness, she was moving once again. It was then discovered that her rudder was jammed left, but fast work remedied that matter so that by early on January 30 *Chicago* began to limp toward Espiritu Santo at a weary four knots an hour.

When Admiral Halsey learned of this operation he ordered the discarded escort carriers *Chenango* and *Suwannee* to move up and provide air cover. A Catalina flying boat went out to maintain a security patrol and Admiral Sherman was sent with his *Enterprise* group to furnish additional combat-air patrol.

Still the enemy refused to give up this victim, and after breakfast that morning an *Enterprise* patrol spotted an enemy reconnaissance plane snooping around twenty miles away. At this *Louisville* was relieved of her towing job, and the hawser was taken over by *Navajo*, a Navy tug. Things went so well that by 3 P.M. Admiral Halsey ordered all undamaged cruisers to proceed independently to Efate, a base south of Espiritu Santo in the New Hebrides. With that, Admiral Giffin, still aboard *Wichita*, signaled his farewell and good wishes to Captain Davis and left the crippled cruiser in tow with six destroyers to provide a screen. The *Enterprise* group was still more than forty miles away to the southeast. The escort carriers were moving into the area too, but so far had not been advised that Admiral Giffin had taken his heavy cruisers out of the picture, so they sailed on, hoping to be available to put up a ten-plane combat-air patrol late that afternoon.

At 3:45 P.M. *Enterprise* picked up a twelve-plane enemy formation that indicated they were sixty-seven miles from the carrier, but possibly only twenty-five to thirty from the disabled *Chicago*. The carrier's fighter director vectored a six-plane patrol from Admiral Giffin's force—presumably from the escort carriers—and these Wildcats intercepted a flight of torpedo-carrying Bettys. This induced them to turn back and take on the helpless *Chicago* instead. In making this move they became entangled with the ten Wildcats that had been launched by *Enterprise*. In the ensuing dog fight three Betty bombers were knocked down, but the remaining nine raced away at three hundred mph., leaving the Navy fighters standing. Lieutenant Commander James H. Flatley, who was leading another fighter element, tried vainly to intercept, but the bombers were all racing at the wallowing *Chicago* before the Wildcats could interfere.

*Navajo* made a game effort to haul *Chicago's* bow into line with the spread of torpedoes; every antiaircraft gun in the group opened fire, and once more the dazzling picture of action was plastered against the Pacific sky. Torpedoes drew their geometric design, guns splashed their venom against the blue, airplanes smashed into the green seas, and fast-moving destroyers darted about like giant water bugs. Four more torpedoes pierced *Chicago's* hull.

The destroyer *La Vallette* enjoyed a few minutes of glory hammering at the incoming torpedo planes until a torpedo bored its way into her engine room and killed Lieutenant Eli Roth, the damage-control and engineer officer, and twenty-one of his men. Others managed to plug the leaks, shore the bulkheads, and M. W. Tollberg, Watertender Second Class, crawled up the forward fireroom ladder, groping blindly until he finally closed the oil-control valve to his fireroom. The superheated steam had partially blinded him and seared the flesh from his hands. He collapsed and died of his injuries. Because of a dozen other such heroic actions aboard *La Vallette* Commander Harry Henderson had his destroyer under way again within two minutes and moving at slow speed on the after engine.

*Chicago* went down within twenty minutes and Captain Davis had to work swiftly to clear all survivors. The evacuation was well carried out with 1049 members of the crew taken aboard *Sands*, *Waller*, *Edwards*, and *Navajo*.

This battle of Rennell Island marked the beginning of Japanese night air operations and the technique of parachute flares and float lights, and it was not until the Pacific Fleet turned its attention to and developed the trick of carrier-based night-fighter proficiency that the new menace was properly countered.

The Guadalcanal campaign was costly in men and matériel—on both sides. Both Japan and the United States lost twenty-four naval vessels, with a tonnage of 126,240 for the American forces, and 134,839 for the enemy. Japan lost two battleships, but no carriers. We lost two carriers and six heavy cruisers. The Yamamoto force sacrificed eleven destroyers and six submarines, while Halsey lost fourteen destroyers and two light cruisers. No U. S. submarines were lost. These figures do not include transport vessels.

Both sides learned many tactical lessons.

## CHAPTER VIII

### BREAKING THE BARRIER

THE GREAT aircraft-carrier battles fought in the Pacific by the American and Japanese Navies, those historic long-range conflicts that raged over the Coral Sea, Midway, the Eastern Solomons, and Santa Cruz, were never again staged on such a stupendous pattern. With the close of the Guadalcanal savagery, the duels between the opposing flat-tops came to an end, and with the exception of the Battle of the Philippine Sea fought in midsummer of 1944, which saw something of a recapitulation of what had gone before, the carrier no longer basked in the naval spotlight.

One of the chief reasons for this was that both sides had fought to a standstill, and it was necessary to rebuild depleted carrier strength and train new air groups. Another factor came up when the first Allied offensives, roaring up through the South and Southwest Pacific, could be supported by land-based planes, and what contribution the carriers made was in furnishing aircraft for strikes against enemy island strongholds. The carrier had reverted to the role of a mobile air base.

By the summer of 1943 carriers of the new *Essex*-class—27,000 tons—and a number of escort types of the then *Independence*-class—11,000 tons—were beginning to join the Pacific Fleet. With the addition of this varied equipment came a new phase in naval warfare, sometimes known as the hit-and-stay offensive. That fall *Essex*, the new *Yorktown*, and *Lexington*, together with the new light carriers *Belleau Wood*, *Independence*, and *Cowpens*, were sent into action against Wake and Marcus Islands. In November *Saratoga*, *Princeton*, *Essex*, *Bunker Hill*, and *Independence* took part in a vicious onslaught against Rabaul, and here, for the first time since *Hornet*'s strike against Tokyo, United States carriers emerged from an all-out attack without damage.

There were reasons for this. The F4F Wildcat had been replaced

by the speedy F6F Hellcat. The sleek gull-winged Corsair, F4U, took on Japanese aircraft that had not been improved since they first appeared over Pearl Harbor. Then too, American planes were better armed with new .50-caliber guns, and carried larger ammunition boxes. New anti-aircraft weapons bristled from the deck turrets of all carriers. Our five-inch guns had improved controls, and the Swedish Bofors 40-mm. weapons, complete with very efficient tracking sights, added greatly to this phase of ship defense. Radar was improving by leaps and bounds, and the blued screens were furnishing important data for the Combat Information Centers. As a result friend was quickly distinguished from foe, and the fighters provided with rewarding targets with rare proficiency.

All conditions were not yet perfect. Carrier bombers could deliver only one bomb of any size, but with improved techniques and bomb-sights it was possible to increase the size of the bomb and gain greater impact rewards. The new Allied rocket launchers were also ready for U. S. Navy aircraft, and with these, fighters were in many instances converted into fighter bombers. Torpedoes still gave considerable trouble in that they were risky items when delivered from high-speed aircraft, and to approach enemy warships at slow speed invited disaster. By the simple expedient of a drag ring that was fitted to the nose of the torpedo, its falling speed was lowered considerably, improving its chances of starting its water run against the target and getting there.

Carrier support of amphibious operations went through many stages of trial and error, but by the time the Okinawa campaign was under way, the carriers had developed new and valued programs of support and furnished the land forces with various kinds of strikes. In some instances they reported to the ground co-ordinators for target assignments, just as though they were working from land bases. As the action moved inexorably toward the enemy home islands, damage control improved and fire-fighting methods were so effective that after 1943 only one fast carrier, *Princeton*, was lost, although *Franklin* and *Bunker Hill* were seriously damaged. Intricate compartmentation, the fog nozzle, fire-fighting practice, and the employment of screening vessels as fire boats saved many damaged flat-tops, and brought them safely to hospitable repair depots.

After the first Allied victory in Europe, the success of Operation Torch in French North Africa, and the American successes at Mid-

way and Guadalcanal, there came a revision of strategic planning, and although the fundamental Allied concept was based on beating the European Axis first, it was obvious that the Pacific situation could not remain dormant.

Everyone who did not have to pick up a rifle and fight for it, was screaming for a second front in Europe. There were some Americans, still smarting under the Pearl Harbor defeat, who wanted no part of the European war and were intent only on defeating Imperial Japan.

But once it became evident that American naval power was winning the war in the Pacific, it was clear that this campaign would have to be continued. Contrary to expectations, the British Chiefs of Staff were in full support of America's intention to keep that campaign in high gear.

The chief problem was to redistribute all available forces so that a second front could be opened in Europe, so that the Mediterranean could be held secure, so that the Battle of the North Atlantic could be continued, and so that an Allied invasion of the European mainland could be prepared once the big break came.

The historians have recorded this from varying points of view, depending on their service allegiances and just what theater of war they were covering. Every commander whether he was in North Africa, Sicily, Italy, or any of the islands of the Pacific, believed that he was fighting the crucial battle of the war. American citizens along the West Coast ignored the European war; wounded service men who had "only fought in Europe" were looked on as malingerers, correspondents who had not as yet covered a Pacific battle were simply cub reporters with little or no experience; what had happened between September 1939, and December 7, 1941, was quickly erased and relegated to a series of skirmishes, reminiscent of the African veldt of the Boer War. Everything depended on the point of view.

A few rational-minded men ignored the headline screamers and, following the Casablanca Conference in January 1943, wound up with a strategic bargain. The British were to continue their all-important Mediterranean operations through 1943. It was generally agreed that any invasion of Western Europe would have to be delayed until the middle of 1944, a decision that would release men and equipment for a real Pacific offensive. This program was to resume Operation Watchtower, a continued thrust up from Guadalcanal through New Guinea until Rabaul was taken and the Bismarcks Barrier breached. New advances were to be made toward Truk and Guam. The Aleutians were

to be made as secure as possible. In addition an advance was planned to move along the New Guinea-Mindanao axis as far as Timor; and to aid China, Burma was to be recaptured by a very elaborate campaign of amphibious assaults and combined land operations.

Throughout the greater part of 1943 aircraft carriers were not importantly engaged in the heavy fighting that marked America's switch from the defensive to the offensive phase of battle. The reason has been explained earlier in this chapter, but by early November of that year it was more than apparent that Rabaul, by now a very important Japanese base, would have to be eliminated if the Bismarcks Barrier was ever to be broken.

American successes at and around Empress Augusta Bay off western Bougainville that resulted in military landings on that island, stirred considerable panic in the Japanese forces, and Admiral Mineichi Koga, then Chief of the Japanese Combined Fleet, decided to reinforce Admiral Tomoshige Samejima's naval forces at Rabaul. Seven heavy cruisers of their Second Fleet, and a light cruiser and four destroyers were rushed to this critical area. It was agreed that this force not only strengthened the Rabaul base, but became a real threat to the American amphibious forces already ashore around Empress Augusta Bay. Admiral Halsey ordered Admiral Sherman's Task Force 38, one built around the carriers *Saratoga* and *Princeton*, to stand by for any eventuality. Providing air strikes against enemy bases as strong as Rabaul was hardly within the combat compass of large carriers, but all these risks had to be assumed.

On the night of November 4 an order was received aboard *Saratoga* demanding immediate attacks on enemy effects in Simpson Harbor at Rabaul. Duplicate copies of this order were forwarded to General Nathan F. Twining, commander of air forces in the Solomons, and to General Douglas MacArthur. From this it is presumed that any attack on Rabaul was to be something of a co-operative effort. We are, by now, well acquainted with *Saratoga*, but *Princeton* was a new light carrier under Captain George Henderson. Their screen was composed of the antiaircraft light cruisers *San Diego* and *San Juan*, and nine destroyers. All these vessels were to be at a rendezvous point 230 miles southeast of Rabaul at 9 A.M. November 5. To get there from near Rennell Island, south of Guadalcanal, some twenty-seven-knot steaming had to be put on, but with the luck of "good" weather that prevented their being spotted by the enemy, Admiral Sherman had his force where it should have been in plenty of time.

*Saratoga* sent seventy-one aircraft of varied categories into the air, and *Princeton* launched nineteen Hellcats and seven Avengers. What combat air patrols were to be carried out would be provided by the land-based forces of the Air Solomons Command.

Two hours after launching, this ninety-seven aircraft strike roared into Rabaul where it was understood that the enemy had at least 150 aircraft to afford a defense. From all accounts they had fully that many and the U. S. Navy raiders were greeted warmly. The main idea, of course, was to beat up the concentration of enemy heavy cruisers and other naval shipping in Simpson Harbor. These orders read well on paper, but none of the pilots had any reliable maps or charts of this area, and on their arrival much valuable time was spent in whipping back and forth searching for the mooring bases, or in determining which were cruisers and which were military transports.

All this gave the Rabaul forces time to put many fighter aircraft into the air, but Commander Henry H. Caldwell, leader of *Saratoga's* Air Group 12, kept his force intact and did not break it up for individual assignments until it was roaring along St. George's Channel, ignoring the curtain of flak and darting thrusts of some seventy enemy fighter planes. As the dive bombers deployed for their approaches with the idea of attacking immediately after the SBDs, both formations had to hurl themselves through heavy enemy flak and machine-gun fire that came from every ship in the harbor. By now, too, practically every vessel had up-anchored and was trying to make a run for the open sea, with the result that important heavy cruisers were dispersed among rust-bucket transports and oilers. The torpedo-bomber pilots had to skid, jink, bank, and wriggle through a forest of masts to get at the cruiser targets, which not only made it almost impossible to put a sight on the ships of the Japanese Navy, but redoubled all the anti-aircraft hazards. Yet, when it was all over only five fighters and five bombers were missing. It should be added, however, that results were not too satisfactory and not one Japanese ship was actually sunk, but the overall damage sustained put Admiral Kurita's Second Fleet out of action for some time.

One bomb went straight down the stack of the heavy cruiser *Maya* while she was tied up fueling, went on through, exploded in the engine room and put *Maya* out of action for five months. *Takao* received two hits that opened a great gash at her waterline. The famed *Mogami*, damaged at Midway, was battered badly by bombs. *Agano* and *Noshiro* were hit, the latter by a dud torpedo, while *Atago*, *Wakat-*



*suki*, and *Fujinami* were damaged by near misses or duds and were able to limp out of Rabaul Harbor. All of these vessels, except *Maya*, were lucky to retire, and the Japanese never again sent heavy cruisers into these waters.

The minute his planes were recovered Admiral Sherman took his force out of the area. A few searching Kates found TF 38 early that afternoon, and later Admiral Kusaka sent out more bombers to finish this carrier force. Something went wrong somewhere, for the Japanese pilots attacked instead LCI-70, a gunboat; and a PT boat that was escorting an LCT back to a repair base in the Treasuries in the Solomons. The Japs attacked this small force in the twilight and for a few minutes the little gunboat had a picnic. Then one of the Kates collided with the PT boat's antenna and crashed, but her torpedo ran free, passed through the bow and wound up in the crew's head without exploding. LCI-70 took a beating, but fortunately her shallow draft allowed all torpedoes that were fired at her to run beneath her keel. However, one started porpoising and at the critical instant plowed into the engine room without exploding, but the impact killed one man. Lieutenant H. W. Frey ordered "abandon ship," but after a reasonable interval had passed without an explosion, a damage-control party went aboard and LCI-70 was towed back safely to Torokina beachhead in Empress Augusta Bay.

The Japanese radio then invented the First Air Battle of Bougainville and claimed to have sunk one large carrier, set ablaze a medium carrier, two heavy cruisers, one light cruiser, and sunk a destroyer. It was their biggest propaganda lie of the Pacific war.

Admiral Halsey had gambled high with his carriers and had been lucky, but Rabaul was still a formidable base, its communications with Truk were still intact, and although the withdrawal of Admiral Kurita's heavy cruiser force enabled us to continue with the important Bougainville operation, the Gilbert Islands action was just around the corner, and Admiral Nimitz still had no heavy cruiser force to spare to protect U. S. shipping en route to the Bougainville beachheads.

Hindsight tells us that it was unfortunate that Rabaul could not have been attacked again within a couple of days. Another strike against the enemy base was scheduled for November 11 with a force commanded by Rear Admiral Alfred E. Montgomery. This was built around *Essex*, *Bunker Hill*, and *Independence*. The *Saratoga* and *Princeton* group were to get into this action also, but because of the

weather conditions their air groups encountered, no important damage was inflicted.

Admiral Montgomery's force organized at Espiritu Santo and moved up to a position 160 miles southeast of Rabaul after an all-night, high-speed approach. More than an hour was absorbed in rendezvousing the aircraft, which gave the enemy time to put up his combat-air formations. Bad weather neutralized strikes that had been planned by Lieutenant General George C. Kenney's land-based bombers over three previous days, and consequently about sixty-eight Zekes were awaiting the raiders as they flashed by Cape St. George.

What started out as a definite strike against enemy shipping turned into a pointless dog fight, and it was impossible for the U. S. Navy fliers to present any reliable details of the attack. Later the Japanese admitted that the light cruiser *Agano* received one torpedo hit, the destroyer *Naganami* was seriously damaged by a torpedo and had to be towed back into the harbor, and the destroyer *Suzunami* was dive-bombed while she was loading torpedoes and her hull was badly split. She went down near the entrance to Rabaul Harbor. The light cruiser *Yubari* and the destroyers *Urakaze* and *Umikaze* were slightly damaged.

In response to this assault, Admiral Kusaka sent out more than one hundred fighters, dive bombers, and torpedo bombers to attack Admiral Montgomery's fleet, and early that afternoon they started to bore in from all sides. U. S. interceptors put on a good show, but ran out of ammunition eventually, and the defense had to be taken up by the ship batteries. From 1:54 P.M. until 2:30 P.M. the sky above Montgomery's force was wild with aircraft, falling bombs, exploding shell-fire, and general wreckage.

*Bunker Hill* took the worst of the enemy bombardment. Eleven U. S. Navy aircraft were lost, but only ten sailors were wounded aboard any of the surface ships. As usual the enemy made extravagant claims of having sunk a cruiser, damaged two carriers, and three other vessels. But the enemy didn't completely believe this himself, for that night Admiral Kusaka at Rabaul sent out more strikes, hoping to drive the American carriers back to Espiritu Santo and thus give him some temporary peace.

These strikes against Rabaul, although affording no lengthy list of sinkings, did have certain far-reaching effects. They dissolved Japanese carrier strength at a time when Tarawa was in the offing. They drew enemy air pressure from Bougainville, and forced Admiral Koga to

withdraw the remnants of his carrier aircraft from Rabaul airfields the next day. These were replaced by inferior equipment and inexperienced pilots drawn from the Marshalls. Further accounting discloses that in the Rabaul attacks the Japanese lost more than half of their fighters, 89 per cent of their dive bombers, and 90 per cent of their torpedo bombers in less than fourteen days. And to top that the great gamble of risking American carriers against land-based aircraft had paid off, and considerable valuable experience had been gained.

To continue a chronological review of the Pacific war action to enable the reader to retain a grasp of the actual course of events, it should be explained that during the last few months of 1943 when Allied forces were flailing at islands and airfields in the Bismarcks and Bougainville, American naval planners organized two impressive amphibious operations. One provided footing for invasion power in the Gilbert Islands, the second found us well lodged in the Marshalls.

The Gilberts and Marshalls, along with the lesser Carolines and Marianas, make up the area known as Micronesia, and are strategically scattered across the main sea lanes linking the United States and the Philippines, China, and Japan. Thus, Kwajalein in the Marshalls, Truk in the Carolines, and Saipan in the Marianas each became a center of a defensive system that could be of tremendous value to Japan. In this ocean network air and naval forces could be organized and deployed, planes and ships could be serviced and air and surface raids launched in all directions. No Allied search planes could reach these depots from any existing bases, for Marshall Island, the nearest, lay 1100 miles from Guadalcanal, 1130 from Canton Island, and 1230 from Johnston Island.

At the time there were conflicting views as to the value of attempting to take these bases, island by island, but it was clear that the farther west the United States projected its sea power, the more dangerous it became to leave these Micronesian bases in enemy hands. Eniwetok, a little more than one thousand miles from Saipan, would be worth a dozen Wake Islands. The naval bases of Truk and Palau in the Carolines held a great threat over General MacArthur's possible advance after the Bismarcks Barrier was breached. Saipan and Guam, while held by the Japanese, stood as a screen before the Philippines, but if they could be captured, American B-29s might be brought up to threaten the main islands of Japan. There was very little choice. The Gilberts and Marshalls had to be taken.

There is no space here for a complete history of this broad operation, but by midsummer of 1943 Admiral Nimitz presented the Joint Chiefs of Staff with a tentative plan for the simultaneous occupation of Kwajalein, Wotje, and Maloelap in the Marshalls, but after some high-level consideration this plan was enlarged and divided into six phases of advance; the Gilbert Islands and Makin, the Marshall Islands, Wake and Kusaie, Ponape, the central Carolines, including Truk, Palau and Yap, and finally the Marianas. On paper this mass advance was most impressive, but many believed that the plan as a whole was too risky since it would take valuable ships well beyond the range of Allied land-based air power.

In the Solomons the United States Navy had never ventured more than three hundred miles from a friendly airfield, and when escorting amphibious forces usually operated within one hundred fifty miles of such support. It was pointed out that Tarawa was more than seven hundred miles from the nearest Allied air base—Funafuti. To do what Admiral Nimitz had planned meant leapfrogging, using the new *Essex*-class carriers as the Pogo sticks.

There were extended fleet maneuvers, target practice, and much shore bombardment throughout the summer of 1943. All types of anti-aircraft drills were held hourly, for by now more than half of the ships in the Fifth Fleet were new and very few of the sailors had seen action. Navy expansion had been so great since Pearl Harbor that even veteran vessels were officered by more than 75 per cent reservists, and manned by almost 50 per cent of sailors who had never been to sea.

The new carriers coming out with only partly trained air squadrons provided more problems. Escort carriers, most valuable in the North Atlantic and the Mediterranean, had not found their true place in the peculiar actions in the Pacific. With no more opportunities to engage enemy carrier fleets, the large fast carriers, nevertheless, offered all the old difficulties of screening and protection. Excepting *Enterprise* and *Saratoga*, the large flat-tops that had fought at Coral Sea and Midway were either in repair yards or resting on the bottom. The newcomers with their attendant battleships, cruisers, and destroyers needed much team training, and their flying men were shy of good combat practice. In the Gilberts and Marshalls operations they were given work in a series of raids that were devised mainly for training and combat experience, rather than for any hope of actual military benefit.

For instance, Marcus Island, which is 1560 miles from Midway and less than one thousand miles from Tokyo, was attacked on September

1 by a task group that flew off *Yorktown*, *Essex*, and *Independence*. Dauntless dive bombers and Avenger torpedo bombers made six strikes that day with negligible results. Over September 18-19 another carrier task force, composed of *Lexington*, *Princeton*, and *Belleau Wood*, made strikes against Tarawa and Makin. Four aircraft were lost, but nine Japanese planes were destroyed and a large number of the military forces killed. More important was a set of low oblique photographs of the lagoon, taken by photographers off *Lexington*, that became of great value in later planning of the assault on Tarawa.

Wake Island was given a going-over on October 5-6 when aircraft off the decks of *Essex*, *Yorktown*, *Lexington*, *Cowpens*, *Independence*, and *Belleau Wood* made 738 combat sorties against stiff opposition. Twelve planes were shot down in combat and fourteen more were lost "operationally," meaning in take-offs, recovery, or somewhere between the carrier decks and the targets. While the U. S. planes were beating up the enemy area, destroyers and cruisers moved in and shelled any available target. At least twenty-two Japanese planes were destroyed.

With the opening of Operation Galvanic in November 1943, the planned attack against the Gilbert Islands, some 200 ships, carrying or escorting 27,600 assault and 7600 garrison troops, 6000 vehicles, and 117,000 tons of cargo, had to be readied and moved to their destination. Included in this was the fast carrier forces of the Pacific Fleet—TF 50—commanded by Rear Admiral Charles A. Pownall. This was the greatest carrier force hitherto assembled anywhere. It was made up of four new *Essex*-class, five light carriers, the *Enterprise* and *Saratoga*, and a screen composed of six new battleships, three heavy cruisers, three antiaircraft cruisers and twenty-one destroyers.

All this was divided into: 1) A Carrier Interceptor Group—*Lexington*, *Cowpens*, and *Yorktown*. 2) The Northern Carrier Group—*Enterprise*, *Belleau Wood*, and *Monterey*. 3) The Southern Carrier Group—*Bunker Hill*, and *Independence*. 4) The Relief Carrier Group—*Saratoga*, and *Princeton*.

The island of Makin was taken by November 23 with not too great a toll of men, but the Navy had the bad luck to experience a turret explosion aboard *Mississippi* that killed forty-three men and wounded nineteen.

Tarawa Atoll was next, one of the worst experiences of the whole Pacific campaign, being, to all intents and purposes, an impregnable fortress. Batteries from the surface vessels did their best to break down

the opposition, and bombers from *Essex*, *Bunker Hill*, and *Independence* joined in the assault against Betio, the fortified island that contained the all-important airfield. Despite all the men and equipment that were hurled into this action, Tarawa was not secured until late in November, and by that time 980 Marines and twenty-nine sailors had been killed, with 2101 wounded.

The Gilberts operation was quickly followed by a fast carrier strike against Kwajalein, center of Japanese air power in the Marshalls. An incidental pass was also made at Wotje. All this took place over December 4-8, and again Rear Admiral Pownall was in command of Task Force 50.

An ocean rendezvous was made by the carrier force and fleet oilers out of Pearl Harbor. After moving east and north in order to make a wide sweep around the Marshalls, the force divided into two groups and changed course for a direct run toward Kwajalein. This line of approach was unexpected, for the Japanese had anticipated that any such attack would come from a sector south and east of the target.

At 6 A.M. on the morning of December 4 TF 50 had reached a position thirty-six miles east-southeast of Rongerik Atoll. The flat-tops swung into the trade wind as a rosy dawn greeted the sailormen. *Cowpens* launched the air-combat patrol for one group, and *Belleau Wood* contributed fighters to cover the other. At 6:30 *Lexington* and *Yorktown* began sending off aircraft for the first strike. By 7:15 all planes were away, hurtling through the cloud-land formations in perfect Vs, and the flat-tops turned easterly toward the planned rendezvous.

The enemy had concentrated his main force of fighter planes at Maloelap in the belief that that would be Admiral Pownall's initial objective, but eventually about fifty Zekes turned up and, supported by a terrific antiaircraft-gun barrage, gave the U. S. Navy fliers a rough time. Again, there was no worth-while information of details of the Kwajalein base and few accurate charts from which to work. Several fluffs were made, and aircraft lost in attacks that had no possible future. As an example, twelve Hellcats went down to beat up the Roi airfield, but having no real idea of what they were attacking, and completely fooled by Japanese camouflage, ran into serious trouble. In spite of their determination they destroyed only three bombers and sixteen fighter planes, leaving between thirty and forty unnoticed in their revetments.

The light cruiser *Isuzu* and several freighters lay at anchor in the lagoon, and forty-one SBDs and thirty-six Avengers from *Essex* and

*Lexington* went to work, but the mass attack was only slightly successful. The bomber boys had had no experience against moving ships and wasted their missiles, once the Japanese ships slipped their anchors. Of the thirty-six torpedoes released by the Avengers, only five found a mark. When it was all over *Asakaze Maru*, a 6500-ton freighter carrying ammunition, went up with a roar, and the light cruiser had her rudder blown away, but managed to get out of the lagoon, apparently in serious condition.

While these planes were wasting a great deal of effort over Roi, others from *Yorktown* and *Enterprise* went searching for business at the other end of the island. They found the principal naval base and an airfield under construction. After a concentrated attack against some thirty ships of many types, Avengers, armed with regular bombs, sank three freighters and claimed to have hit the light cruiser *Nagara*. Another group of planes attacked a seaplane base on Ebeye Island and sank or destroyed eighteen float planes that were anchored there.

In the effort expended over this forty-five-minute strike only four surface vessels were sunk and fifty-five aircraft destroyed for a loss of five American planes. A great deal of valuable naval craft and bomber aircraft had escaped scot-free. But in all this we begin to see the limitations of the aircraft carrier when it is used for such sea versus land attacks. Carrier fliers require first-class intelligence, inspired handling from combat control, and full assurance that the carrier deck will be where it is supposed to be when the strike is over.

In any dispassionate analysis of the value of the aircraft carrier, the limitations of the vessel must be considered, particularly in relation to aircraft from either land bases or opposition carriers. Proponents of carrier warfare have argued that the vessel can steam six hundred miles a day and with that range have almost certain immunity from enemy aircraft. But it must be remembered that this giant vessel, sailing six hundred miles a day, is attempting to evade an aircraft that presumably can fly six hundred miles an hour. Concealment under those conditions may be very difficult, and once found, we have seen how simple it is for well-trained naval airmen to put the flat-tops out of action.

Improvements in long-range radar have increased the carrier's woes, and as land-based air power continues to extend its range, vulnerability becomes more apparent. Enlarging the size of the carrier to handle more planes, to provide greater speed, or a more flexible program of operations in no way relieves the carrier of the air-bomber problem.

The modern 80,000-tonner is simply a larger target, one which the attackers can dispense with precision bombsights.

We have seen how up to now British aircraft carriers enjoyed some small measure of triumph and filled in valued roles against the U-boat menace. They never had carrier combat against an enemy carrier force, although ancient torpedo bombers off *Ark Royal* did set up the *Bismarck* for disposal by guns of the battleships. Whenever they tried to compete with land-based aviation, they were in trouble.

We have also seen that in conflict between opposing carrier forces, luck plays an important part in every engagement. Whether the bombs or torpedoes of one force damage and sink an opposing carrier depends much on where the damage is inflicted, and what eventual destruction follows. One bomb or torpedo may just pierce a hull or flight deck, and, all being equal, the carrier will be able to continue on course, launch or recover aircraft, and make repairs as she goes along. However, because of the complex construction of the flat-top a hundred other hazards may arise that will seal her doom. Although providing a glorious pageant of naval action, we have seen, so far, that carriers suffered a dreadful toll. They have been lost to enemy submarines, the bombing hail of enemy-carrier aircraft, or sunk by land-based aircraft.

Once the great carrier-versus-carrier battles were concluded in the Pacific, U. S. carriers found themselves assigned to what was listed as "fast carrier strikes" against enemy land-based strongholds. It was then discovered that the effective striking range of the carrier is not defined by the attacker, but instead is fixed by the performance capacity of the defender. As Major Alexander P. de Seversky, the noted aviation analyst, has pointed out, if the enemy aerial force can reach out for three thousand miles, the carrier aircraft need a range of three thousand miles *plus* the inland distance to the target to be attacked. All goes well as long as the sky is in friendly hands, but if the enemy has any percentage of air control, the carrier is in a hazardous situation. The major's figures are, of course, based on present-day ranges and operational considerations.

The problems in the series of fast carrier strikes that were planned in the Pacific, can be re-emphasized by further reference to Major de Seversky's doctrines. He points out that in the early stages of World War II Allied bomber offenses both in the European and Pacific theaters were in great need of fighter escort, and there were periods when the entire strategic bombing offensive against Germany was in danger



of collapse. From self-appointed military experts came the inquiry as to why a few carriers were not moved in close to the German coast from where they might provide fighter cover for the Army Air Corps' fleets of bombers. By that time wiser heads had realized that naval carriers that were moved anywhere near major land-based aircraft would not stay afloat long enough to launch a full squadron of fighters.

At any rate the Allied navies never took this risk. It would have been sacrificial to have sent carriers into the North Sea to furnish fighter cover for our Forts or Liberators. And no attempt was ever made to afford carrier-fighter cover for the B-29s that roared into Japanese home areas late in the Pacific campaign. It was obvious too that carriers could risk such operations only when full command of the air involved was enjoyed—but by that time the bombers would be able to carry out their raids, unescorted and unmolested.

All this must be considered when we trace further the operations of U. S. Navy carriers through the next stages of the Pacific war. The preceding strike against Kwajalein was to have been followed by a second that was to have been launched by noon that same day, December 4, but Admiral Pownall decided to call off everything but a snap strike at Wotje, and retire. In all probability he was discouraged by the meager results obtained. He also realized that his pilots had not fully recovered from the heavy going they experienced in the Gilberts. Probably, too, he wished to put as much distance as possible between his ships and the Japanese land bases, for he had no adequate defense against an enemy night attack.

Whether or not his decision was questioned—and there is reason to believe it was—Admiral Pownall was a realist, for he now knew that "fast carrier strikes" provide an equation of risk against possible result, and once the enemy land-based force is enticed into the air the defender will be in the more advantageous position, and even the loss of a destroyer would be too great a price to pay for the destruction of the few planes that were presumed to be left at Kwajalein. After all, this was the center of a real defensive system, and Admiral Pownall knew that the longer his flat-tops stayed around, the greater would be the risk.

Between 10 and 11 A.M. the carriers were busy recovering aircraft, but by noon *Yorktown* launched thirty planes for a raid against Wotje, a strike that accomplished little but did result in a few fairly valuable photographic reconnaissance prints. A few minutes after these

planes had left, the enemy sent a short attack against *Lexington*; three Kate torpedo bombers from Maloelap came streaking out of a purple sky, nosed down and roared on across a sapphire sea. Lookouts smartly spotted them, and the *Lexington's* guns opened fast—all three Kates were splashed with a gush of orange flame, very close to the American flat-top.

While policing up her deck after launching the Wotje strike, *Yorktown* was attacked by four Kates that had come in very low while the air-combat patrol high above was frisking about, enjoying the beautiful afternoon. Gunners aboard the cruiser *San Francisco*, and the destroyers *Taylor* and *LaVallette*, crashed two of these before they could release their torpedoes. A third sheered off, apparently in fright, without releasing his torpedo, and the fourth rode boldly down the center of the formation until American gunners shot him to pieces.

It was then, after the aircraft of the Wotje mission were recovered, that Admiral Pownall signaled: "Mission completed. Retire northeastward course 35°, speed 25 knots." It was hoped that they would soon steam beyond enemy bomber range, but that came under the head of wishful thinking. None of the carriers in this force could boast of a night combat-air patrol; that is to say, they had no carrier fighters trained in night operations. Fortunately, the antiaircraft gunners had had considerable experience the month before and put up a fairly effective defense.

The Japanese night attacks followed a definite pattern, as explained before. Just before sunset one or two snooper planes began trailing the surface formation and when darkness fell they dropped a series of marker float lights to set up a guide track leading into the carrier force. The oncoming bombers and dive bombers first picked up these lights as their rendezvous point. Once the attackers were in position, the snoopers went on ahead, sailing high over the surface formation and dropping bright parachute flares that clearly illuminated the target. With their flare path laid down, the bombers simply went roaring at the carriers and their screen vessels that were clearly outlined beneath the parachute glare.

Kates and Bettys charged in from every available point and continued this attack for nearly forty-five minutes. This was a very economical manner of offense for the attackers required no fighter cover, and considering everything, could bore in from any angle, height, or manner. The original idea, tried out in the Solomons campaign, reached its greatest pitch on this night, December 4-5, 1943.

Another factor in their favor was the way all this crisscrossing fouled the U. S. Navy radar screens. It was impossible to tell the flare-laying snoopers from the bombers or torpedo planes, and even when a plane pilot had released his explosive load he stayed in the area, circling and crisscrossing through the maze of attack and generally raising merry hell with the men who were attempting to sort some semblance of order out of this electronic chaos.

A later compilation figured that from thirty to fifty aircraft were involved. About fourteen definite strikes were made by bombers and torpedo carriers before the giddy evening was over. Little damage was done over the first thirty minutes, but by 10:55 more enemy aircraft came in from port and starboard and caused Admiral Pownall to appeal to his support ships: "Anyone with a good setup, let 'em have it!" By then the sky was beautifully clear and the moon, glaring like a brand new silver dollar, brought out anything the parachute flares missed. Every ship in the formation stood out as clearly as by day, although the gunners were still trying to eliminate the air raiders by firing on radar contact.

At 11:23 P.M. a snooper released three more parachute flares from about five thousand feet off the formation's port bow. A plane, screeching down-moon, roared at *Yorktown* with everything full out. Gunfire from the carrier and the destroyer *LaVallette* headed it off just when things looked their worst, but a few minutes later another came out of the glare and scored a torpedo hit on *Lexington's* stern. The explosion took out the compartment that contained *Lexington's* steering plant. The rudder was jammed over tight, nine men were killed and thirty-five wounded. For a minute or two the big carrier went wild and threatened the whole formation, but finally Captain F. B. Stump, using the radio-téléphone, explained that he could make speed but could not steer. His men worked hard to install five submersible pumps, and someone had set up an emergency hydraulic unit in the steering compartment before leaving port, but the man who knew how to operate it had been wounded. He did his best to explain by telephone from the sick bay how to put it to work. By that time the emergency pumps were clogged with rags and other waste that had been left around by careless sailors. Another twenty minutes of wild effort, mostly by Chief Electrician's Mate L. R. Baker and Quartermaster D. E. Woods, brought the rudder amidships. Under these conditions *Lexington* could make headway, steering on her engines, although one main shaft had been broken by the torpedo. By

midnight she was making twenty-one knots. All this had taken place while the Japanese airmen continued their attacks, and were driven off as fast as they came within anti-aircraft-gun range. By 1:24 the next morning the raiders had cleared off, the moon had set, and all hands relaxed for a peaceful Sabbath. By December 9 the task force steamed into Pearl Harbor and *Lexington* was quickly repaired.

Through the weeks and months of early 1944 the aircraft carrier had to assume the role of a mobile air base and furnish aviation support for the island-hopping campaign that was to follow. Kwajalein and Eniwetok were taken, and the grand sweep of the Central Pacific was under way. The bulk of the task was accomplished by the amphibious forces, but unquestionably the carriers had a dangerous but decisive part. This combined striking force, commanded by Rear Admiral Richmond Kelly Turner who was considered to be America's foremost amphibious expert, mounted every type of available naval weapon and included several top-secret items.

The surface force consisted of some of the U. S. Navy's newest battleships, mounting sixteen-inch guns that were used to lay down formidable barrages before the troops stormed up the beaches. The aircraft carriers contributed hundreds of planes. In the area of Kwajalein, an atoll about seventy miles long and eighteen miles wide, there was a lagoon that could accommodate the largest fleet, and once this area was captured the problem of seizing the rest of the Marshalls group was made easier. Truk, Japan's Pearl Harbor, was 950 miles to the west, Wake was 600 miles to the north, and with the capture of Kwajalein the great question was whether the full Japanese Fleet would come out of its sheltered harbors and fight. The U. S. Navy was to be as frustrated in this as was the Royal Navy when it hoped the German pocket battleships would risk a chips-down engagement. The Japanese Navy never accepted the challenge.

Victory came hard, but success followed success, and the assault on Truk in the Carolines presented problems that had never been faced before in any land-sea operation. Truk is not a single island, but a scattering of a score of volcanic eruptions that form islands of various size and elevation and are surrounded by a snag-toothed coral reef about thirty miles in diameter. Every island and sand bank contributed to its fortress possibilities. But this vital step in the destruction of Japanese naval power had to be taken.

Following the successes at Kwajalein and Eniwetok, the assault was

carried out with such speed that the Japanese at first assumed it was "merely a reconnaissance in force." Later they admitted the force was "exceedingly powerful." They had no idea whether the American forces planned a landing on Truk but acknowledged that "the situation had increased with unprecedented gravity."

It was no walk-over for the ground forces, however, and the casualties were heavy. Fortunately, by now, Japan began to feel the shrinkage in her merchant fleet and had difficulty in keeping columns of supplies moving into Truk. Great convoys of these ships were trapped, sunk, or dispersed. During the attacks of February 16 and 17 carrier aircraft destroyed 201 enemy aircraft, 127 of which were shot down in air combat. As a result there was scarcely any enemy air opposition on the second day of this assault. The Japanese also lost two light cruisers, three destroyers, one ammunition ship, one seaplane tender, two oilers, two gunboats, and eight important cargo ships. A cruiser—or a large destroyer—two oilers and four cargo ships were badly damaged and just managed to limp away to safety. Shore facilities on the principal islands, including runways and installations on an airfield, were bombed and shot up.

American losses in this period were seventeen aircraft, and some moderate damage to one surface ship.

The great American noose was being drawn tight, cutting inter-Axis communications. Blockade runners attempting to get into the Far East ports were trapped, attacked, and destroyed. Four German blockade runners trying to slip out of the same ports were intercepted and sunk. They carried sixteen thousand tons of rubber, ten thousand tons of tin, and quantities of edible oils, gum, resin, quinine, and wolfram (a tungstate of iron and magnesium) that were intended to replenish Hitler's diminishing supplies.

With the fall of Truk came increasing evidence of the Japanese reluctance to fight. They were desperate, exhaustion was setting in, and by April 1944, when afforded an excellent opportunity to use what ships and weapons were still available, it became obvious that the Imperial Japanese Navy was in no shape to fight on any but its own terms.

A British task force of carriers and warships, commanded by Admiral Sir James Somerville, staged a surprise attack against the Japanese on Sumatra and taunted them into an area over which they had kept a constant air reconnaissance. If ever there was a chance to repeat their earlier success in this general region, this was it. However, they

made little effort to put their available fleet against the Royal Navy force, and bombers and fighter bombers took off from British carriers to pound the airfield and docks at Sabang at the northern end of Sumatra. Sabang had a fine harbor which was of great value to the Japanese in any large-scale operations in the Indian Ocean, and a large number of fuel dumps were located there.

This attack on Sabang, apart from testing the measure of Japan's willingness to fight, had, in addition, struck a severe blow at their communications with Burma. Admiral Somerville's fleet was never any closer than one hundred miles to Sumatra when this important raid was made, but its new Barracuda aircraft made many direct hits with heavy missiles on the dockyards, power stations, wharves, barracks, hangars, workshops, and the radio station at Sabang. Large bombs fell on two merchant ships, two destroyers and an escort vessel were set afire, twenty-two planes were destroyed on the ground, and a 1000-pound bomb fell smack on a large oil tank.

The airfields at Lho Nga were also attacked and several aircraft destroyed on the ground. Three Japanese torpedo bombers that were sent off to harass the Allied Fleet were all shot down by British carrier fighters. This attack, coming four days after Admiral Mountbatten had moved his headquarters from India to Ceylon to be more closely linked with the Naval Command, was particularly timely and effective.

All the aircraft, but one, returned safely, and the British naval force suffered no damage of any kind. Even with the chain of victories the Americans had been scoring in the Central Pacific, it was somewhat puzzling, but on studied reflection it became clear that the Japanese would never fight again in the Indian Ocean. Within the shelter of the Andamans, the Nicobars and their protecting islands in the Netherlands Indies, their ships had been able to operate with land-based air cover. In that way they could avoid any Allied fleets that by now had overwhelming superiority in aircraft carriers. It was a principle that the Japanese had carefully observed in all their Pacific engagements.

In the meantime another vigorous offensive was launched by American and Australian forces, backed by the powerful naval arm, against Hollandia in Dutch New Guinea. Landings were made at Humboldt Bay, Tanahmerah Bay, and at Aitape. Beachheads were secured, and strong forces of shock troops captured a fighter-bomber airfield at Tadjia near Aitape. Thousands of Japanese troops were bottled up between a rampart of mountains that ran down the center of northern

New Guinea, and a sea completely dominated by Allied naval forces. More than 80,000 additional Japanese were suffering a like fate in the Bismarck Archipelago and the Solomon Islands to the east. The communication of all these trapped forces had been severed, but by some military miracle most of them escaped in spite of heavy attacks made by carrier aircraft on their fleets of landing barges.

The Allied landings were comparatively easy and suffered no great toll of life, which allowed immediate landing of engineers, technical units, and large equipment for rebuilding bridges, roads, defenses, and airfields.

By now even the most conservative men in all forces were ready to think that the war in the Pacific would be over much sooner than had been anticipated eighteen months before; all that was needed to cap this opinion was for the Japanese to "come out and fight." This did not imply that the war against the Japanese had overnight become a push-over. The enemy still had considerable naval and air power. He had strong bases among the islands of the inner barrier. Much would depend on how he used what he had. Obviously, he had no intention of chancing an all-out major sea battle with his American opposition.

Japan could not win this war, for she could not compete industrially with America's Arsenal of Democracy. In twenty-eight months of war United States forces had hacked great portions of her sea and air power to wreckage, and the United States naval force was recognized as the greatest sea-air power in the world. America had proved that she could outbuild Japan in ships, aircraft, and weapons of war. Only the Japanese war lords in Tokyo refused to recognize the inevitable.

The victory grind continued on and on. In mid-May General MacArthur reported that a co-ordinated air strike against Surabaya, that involved forces from the Southeast Asia area and the Central Pacific area, had been completed. This involved British, American, Australian, French, and Dutch units of various services. Operating in conjunction with supporting naval forces, the Japanese naval base there was first attacked after dawn by fleets off American and British aircraft carriers.

The pattern was repeated; shipping, naval installations, an oil refinery, and several airfields were heavily damaged by direct hits. Ten vessels in the harbor, totaling 35,000 tons and including a small tanker and a small naval warship, received direct hits. Two floating dry docks were damaged, and at Wonokrono an oil refinery was destroyed completely, and its power house demolished by a direct hit. Storage tanks

and another refinery were set ablaze and a column of smoke from the carnage rose to a height of five thousand feet. Also important naval installations were badly damaged by direct hits.

Land-based bombers followed up the attack made by the carrier planes, and nineteen enemy aircraft that were grounded at Malang, Tanjong, and Perak airfields were battered to bits. Two fighter planes, sent up to intercept, were quickly shot down. Because of the completeness of the surprise attack, the Allied forces lost but three aircraft, and the surface fleet received no casualties or damage.

Continuing the attack that night, the land-based heavy bombers went back to the same target; this time selecting railroad marshaling yards and rolling stock. Again no real opposition was met and all planes returned safely although their raids had involved flights of 2500 miles.

From this time on, events of this kind happened with monotonous regularity. Light naval forces and naval aircraft sank a number of Japanese barges at New Ireland, small craft were badly damaged in an air attack at Bougainville, land-based medium bombers attacked three 1000-ton ships in the Tanimbar Islands—one was set on fire, the second was run aground on a reef, and the third heavily damaged. At Manokwari, Netherlands New Guinea, one large and two smaller vessels were destroyed by aircraft attacking Japanese shipping there. Fighter bombers sank three small barges and other light craft at Duke of York Island, New Britain, and an air patrol damaged two large barges in the Buka, Solomons, area.

In the meantime Wake Island had been taken over completely by Allied troops. On May 18 United States bombers intercepted a Japanese patrol vessel east of Paramushiro in the Kuriles, and runways, power stations, and piers in the Marshall Islands were badly hit in raids staged by various U. S. aircraft over May 18–19, 1944.

Then came the great assault on Saipan in the Marianas where the enemy found himself fighting for his life in what might be termed his own front yard. Pre-assault operations began as early as June 3 with a bombing strike on Palau in the Carolines by land-based planes out of the Southwest Pacific bases. After several forms of interdiction missions by Army flying men against Japanese airfields at Peleliu, Woleai, and Yap, Admiral Mitscher's four fast carrier groups took over. The following U. S. carriers played an important role in what was to happen: *Essex*, *Langley*, *Cowpens*, *Hornet*, *Yorktown*, *Belleau Wood*, *Bataan*, *Bunker Hill*, *Wasp*, *Monterey*, *Cabot*, *Enterprise*, *Lexington*,



*Princeton*, and *San Jacinto*. (The above *Wasp* was a replacement for the one lost in 1942.)

On June 11 when this four-group formation had reached a point two hundred miles east of Guam, 208 fighters and eight torpedo bombers were launched and sent against Saipan and Tinian. The idea here was to lessen the danger of enemy air attack over the following night, and to eliminate as much shipping as possible. From all accounts, this effort paid off since at least thirty-six Japanese aircraft were disposed of.

That evening Rear Admiral Joseph J. Clark, commanding TG 58.1 (*Hornet*, *Bataan*, *Belleau Wood*, and *Yorktown*) continued to head for Guam while the other three carrier groups moved toward Saipan and Tinian. Early the next morning the Japanese made one of their flare- and float-light attacks against the northern group but no damage was inflicted and one of the attacking aircraft was shot down in flames. As compensation Rear Admiral William K. Harrill's group (*Essex*, *Langley*, and *Cowpens*) encountered a convoy of twelve Japanese supply ships that had just left Saipan for Yokohama. They were escorted by a torpedo boat, nine patrol craft, and subchasers. Just before they were intercepted they were joined by sixteen fishing vessels that had been bound for Truk to provide fish for the Japanese garrison there, but when it was clear that they would never get through, they attempted to join this convoy and return to Japan.

Aircraft from Admiral Harrill's carriers never had it so easy. One of the worst debacles of its kind took place on June 12, and when it was all over the convoy was devastated, the torpedo boat *Otori*, three subchasers, and ten freighters were sunk. This same air group also carried out air strikes on Saipan and Pagan in which another naval auxiliary that was undergoing repairs was sunk, and another large freighter had to be beached. At the same time air attacks by planes of the other three groups reduced enemy air power on and near the main islands to practically zero.

Meanwhile Admiral Clark's group was carrying out heavy bombing strikes against Orote airfield on Guam. A search plane from *Hornet* spotted a six-ship convoy some 134 miles west of Guam. The report on it was delayed, but since the convoy hung around in the area, hoping to get into Apra Harbor, it eventually came to the attention of a formation of Hellcats and received a savage beating. Nevertheless this convoy did land some reinforcements on the island.

By June 13 United States carrier aircraft were streaking back and

forth over every island, seeking targets to bomb or shoot at. Captain William I. Martin, pilot of an Avenger off *Enterprise*, had a remarkable experience at this time. He had been sent off to bomb aircraft installations near the Charan Kanoa air strip on Saipan and immediately after he had punched his bomb release at a 3500-foot level, a shell from an antiaircraft battery scored a direct hit on his plane when it was over the lagoon. This shell fouled the controls and the aircraft went wild and tossed out Martin and his two crew members from a height of about three thousand feet. Both crewmen were killed by the immediate shock, and Martin found himself hurtling through the air, unable to get his parachute to function. He had been through something like this before when he flew off *Hornet* during the Battle of Santa Cruz.

There is a popular notion that airmen who are caught in such difficulties suddenly remember forgotten prayers, unfamiliar Psalms, or lengthy passages from the Scriptures. True or not, Martin remembered the first few lines of the Twenty-third Psalm:

*The Lord is my shepherd; I shall not want.  
He maketh me to lie down in green pastures;  
He leadeth me beside the still waters . . .*

Still waters! Psalm or no, Martin suddenly recalled reading a report of a pilot at Guadalcanal who had found himself in this same unenviable situation, but had miraculously survived by wriggling into a perpendicular position and then straightening his body like a dart, just before he hit the water.

"There wasn't much time to argue about the possibility of getting away with this legendary feat, but I got one break. Just before I hit the water, my parachute partially opened, and must have checked my speed. At any rate, I chugged into shallow water, as stiff as an arrow, and the next thing I knew I was sitting on the sandy bottom with nothing worse than a bruised hip. I saw my plane splash in and begin to burn fiercely. Pieces of the broken-up structure were still fluttering down from the sky."

Captain Martin had escaped one form of death, but some Japanese soldiers ashore took pot shots at him with their rifles, so he ducked back under the water, towing his seat-pack which contained his unopened life raft. He eventually reached the reef and the rifle fire died down.

"I don't remember how I got to that reef," he explained, "but next

I sensed that two boats were putting off—to take me in, I suppose. I slithered back into the sea and lay on the slope of the reef with my nose just out of the water.”

While resting there he figured out just where he was, and took time to make a few pertinent observations. When some 20-mm. fire began splashing nearby he decided to make a run for it.

“I clambered across the reef and dived into the breakers off its seaward edge. This broiling surf made a good cover-screen, and to play it safe, I now inflated my life raft. Fortunately, at this point another American air strike was coming in, and when the bombs began to fall, the jokers who had been picking on me had something more important to occupy their minds. I rigged the parachute and seat pack as a sea anchor, filled the raft with water to cut down the yellow glare and visibility, and started drifting seaward. I knew by then that if I wasn’t soon picked up, I’d wind up in the Philippines. I’d beat MacArthur to it. Fortunately, I had some food and water in my raft pack, and I decided to sit it out.”

From that point on matters proceeded according to rote. A Hellcat and an Avenger spotted him after he had caught their attention with a mirror and a package of marker dye. When they came down low to identify, the Japanese on shore began firing again, but the pilots stayed around long enough to drop an emergency kit. Captain Martin then dispensed with the sea anchor, rerigged his parachute as a sail and began to move at a speed of about three knots toward the fire support area. Around noontime two float planes from *Indianapolis* landed nearby and one of them flew him back to the flagship.

Admiral Spruance was most interested in this airman and had a long talk with him. He was impressed with Captain Martin’s observations of the reef, and considered them important enough to send out by dispatch. Martin thoughtfully had remembered the depth of the water in the lagoon, the details of the coral heads, the absence of underwater obstacles, the length of the reef, and the height of the surf.

To cap this story, Captain Martin was returned to his carrier by the destroyer *MacDonough*, and on the way this vessel had one bombardment assignment. The rescued airman was able to direct her fire, and had the satisfaction of seeing *MacDonough* knock out the antiaircraft battery that had shot him down.

That was the happy side of this June 13, but as usual the law of compensation demanded its toll. A number of Avengers in *Lexington*’s air group had been equipped with rocket launchers. This form

of missile had been used in Royal Air Force antisubmarine squadrons for months, but the weapon was new out here in the Pacific, and there were few airmen who knew how to use them under all attack conditions.

This particular formation of Avengers, which was led by Lieutenant Commander Robert A. Isely, went out to make runs on Aslito airfield, Saipan. These attacks were to be made from shallow glides, and the rockets were to be launched at ranges between one thousand and two thousand yards. Commander Isely's lead plane and two more following closely behind were hit by intense anti-aircraft fire as they were making their approach glides. Two of these Avengers burst into flames and crashed, the third was severely damaged but managed to get back to its carrier.

Commander Isely's loss was irreplaceable, for he was one of the most skilled pilots in the U. S. Navy, and for a time there was some concern about using these rocket missiles, particularly in long-range approaches or against intense and accurate anti-aircraft fire.

Two carrier groups of the force had to move out to refuel, and as a result the fast carrier strikes had to be cut down. However, by June 15 the enemy had been given such a beating he no longer could put up much of a defense over Saipan. That night, while Rear Admiral John W. Reeves, Jr., and Rear Admiral Alfred E. Montgomery's task groups were recovering aircraft some forty miles west of Saipan, enemy planes were detected coming out of Guam. A combat-air patrol sent up from *San Jacinto* shot down seven of these bogies and broke up a first attack. After sunset, another developed, and two night fighters off a carrier intercepted and drove off the Japanese fighter cover. About twelve torpedo bombers broke into the clear and concentrated on *Lexington* and *Enterprise*, and for a time matters were hair-raising, but eventually all the torpedoes were evaded, and the fighters had a turkey shoot, knocking down eleven of the twelve torpedo planes.

The surface fleet had supported the carriers for about four days, and in turn the carriers had made raids that had pounded this key Japanese base, and when all aerial opposition had been driven off, the long-range guns of the battleships, cruisers, and destroyers moved in to add to the carnage. On the fifth day the transports made their rendezvous outside the coral reefs that guarded the island, and landing craft began wild dashes toward the beaches. American infantry and Marines swarmed ashore at Agangan Point, and the Japanese who had survived the bom-

bardment, made a brave stand with murderous enflading fire and mortar shells.

This action at Saipan, involving the 2nd and 4th Marine Divisions and the U. S. Army's 27th Infantry Division, provided the bitterest fighting since Tarawa. The Navy's air attack, and bombardment by long-range guns had pounded the island with wicked intensity, but the topography was too mountainous for the initial attack to have much effect. It must be admitted that the defenders, who were abandoned by their own naval and air forces, fought with savage tenacity. They no doubt knew they faced hopeless odds, but they made the most of the ground cover in the central uplands, and surrendered the southwestern end of the island to the invaders who captured untold amounts of military supplies and stores. The defenders, however, hung on and fought to the end. It was almost a month before the island could be considered to be cleared of the enemy. A bloody conquest, but it brought Tokyo within fifteen hundred miles, easy range for the new B-29 Superfortress bombers. More important, Saipan was a base that could be readily supplied by sea and unlike those in China where every gallon of gasoline and every pound of explosive had to be flown in by air.

While all this action at Saipan was taking place, General Douglas MacArthur had moved an amphibious force ashore on the lightly defended Noemfoor Island off northwestern New Guinea. Once a beachhead had been established, he next sent in a force of jungle-trained paratroopers to outflank the Japanese defenders. In five days, Noemfoor Island, with its three airfields, put General MacArthur exactly eight hundred miles from Mindanao in the Philippines. His promised return was only a matter of time.

## CHAPTER IX

### THE NATURE OF A BATTLE

By EARLY autumn of 1943 the Japanese Imperial Headquarters staff realized that if a decision was to be reached in their favor before their manpower and war supplies were exhausted, the full strength of the Emperor's fleet would have to be hurled against the United States Pacific Fleet "whenever and wherever it appeared," in order to destroy it with one blow.

This decision resulted in the Battle of the Philippine Sea, a carrier conflict, the like of which had never been experienced before. At the time, during the high emotion of triumph, a certain school of journalists facetiously presented this action as the Marianas Turkey Shoot, a catch phrase that was based originally on American claims that 476 Japanese aircraft were destroyed in this two-day battle, whereas U. S. forces sacrificed but 130. How reliable these bold figures are is difficult to assess, for at this writing, a complete War College analysis has not been completed.

Whatever the toll, the Battle of the Philippine Sea still might be regarded as the greatest carrier action of all time, *had it been fought to a successful conclusion.*

In this chapter we shall learn of the successes and failures, the decisions, ill and good, the roll of the dice, and the second-guessing that follows every savage or friendly conflict. While applauding the successes of our fighter aircraft, critics of the action have complained that although the enemy carrier fleet did move within range, it was not sunk. Other critics, who took part, have stated that the results of the battle were disappointing since important units of the Japanese Fleet that had come out into the open for the first time in more than a year and actually made several air attacks on our superior force, were able to escape without our coming to grips with them.

**BATTLE OF THE PHILIPPINE SEA**

**"THE MARIANAS TURKEY SHOOT"**

**JUNE 18-19, 1944**

**IN THIS ACTION THE BULK OF  
JAPAN'S AIR FLEET WAS DESTROYED**



**JAPANESE FORCE LOST**  
395 FIGHTERS AND BOMBERS  
12 FLOAT PLANES

**U.S. NAVY LOST**  
130 AIRCRAFT  
76 AIRMEN

**SHOKAKU**  
SUNK BY U.S. SUBMARINE

**TAIHO**  
SUNK BY U.S. SUBMARINE





It is true that our troops, fighting to secure Saipan, had to be well screened and protected against the enemy surface force, but it was considered unfortunate that our entire strength was deployed for this purpose, and therefore not permitted an opportunity to take the offensive until too late to prevent the enemy's retirement. It will be remembered that the strategic island of Saipan had been invaded by U. S. amphibious forces on June 15, a few days before the Philippine Sea battle was drawn.

One of the chief factors in this conflict was the reorganization of the Japanese Fleet, effected in March 1944, in which carriers had replaced their battleships as the dominant weapons of the force. Their First Mobile Fleet, under the command of Vice-Admiral Jisaburo Ozawa, who previously had commanded all carriers and their destroyer screens, was a force in which the battleships were now under the carrier admiral's tactical command. This was not a naval innovation; the same reorganization had been established in the U. S. Navy about eighteen months before.

So now carriers were to take the naval war to the Americans, and while Japan's determination to engage the U. S. Fleet was proclaimed loudly, and unquestioned success promised, Admiral Ozawa's new command was seriously handicapped by the lack of immediate supplies of efficient fuel oil. American submarines had played havoc with the enemy's tanker fleet, and the great supply of fuel captured early in the war, and the acquisition of the oil fields of Tarakan and Balikpapan, Indonesia, had been somewhat canceled out. Japanese officials had to plan with short-range action in mind, and any proposed offensive would have to be fought as near the standby area of the Mobile Fleet as possible.

This fuel-oil situation had many angles and features at the time, one of them being that Borneo oil, although pure enough to be piped into fuel bunkers without routine processing, still contained highly volatile elements that in some cases created dangerous fire hazards aboard ship, or possessed impurities that fouled the boilers. All these considerations limited the proposed operations of the Japanese to a short-radius arc out of Yap and Woleai in the western Carolines.

The Japanese plan, listed as Operation A-Go, hoped to entice the U. S. Pacific Fleet into waters south of the Woleai-Yap-Palau line where Admiral Ozawa would be able to fight well within his fuel-oil range. At the same time the insular air bases to the west and south would provide considerable aid, and it was hoped that these land-

based aircraft would sink many American ships. If, on the other hand, the U. S. Pacific Fleet commander decided to switch his forces into the Marianas area—to work over Saipan—the battle to be fought would be relegated to the Japanese ground forces, under General Yahcita Saito, who would be expected to drive off General MacArthur's amphibious troops still clinging to a hazardous beachhead.

With all this in the planning stage, Admiral Ozawa's Mobile Fleet, with nine aircraft carriers set up into three divisions, moved to the naval anchorage at Tawitawi, off eastern Borneo in the Celebes Sea. It occupied a central portion of the main convoy route from the Kadassar Strait to Manila, Formosa, and Japan. Since it lay only 180 miles from Tarakan, any fleet there could obtain quick deliveries of Borneo's unprocessed petroleum. The only drawback was that Tawitawi had no airfield on which to train new carrier air groups, and also offered good-hunting waters for prowling submarines.

Once more Intelligence luck came our way, and the U. S. Seventh Fleet was advised of Admiral Ozawa's plans when a copy of the preliminary outline of Operation A-Go was captured at Hollandia. From this, and the reports from several smart submarine reconnaissance missions, Vice-Admiral Thomas C. Kinkaid was warned that a powerful striking force was gathering at Tawitawi, and the admiral sized up the opposition with masterful clarity.

The Japanese order "Prepare for Operation A-Go" was issued by May 20, and all land bases, comprising what was known as their First Air Fleet, were alerted, and additional aircraft were deployed to Saipan, Tinian, Guam, Truk, Yap, Palau, and several other less important islands. All these land bases were alerted in the hope that the U. S. Pacific Fleet would oblige and decide to fight Admiral Ozawa in his own backyard. Instead, Admiral Nimitz decided to strike in the Marianas, an area in which the Japanese had only 172 land-based planes. Ozawa had hoped that his First Air Fleet would attack and destroy at least one third of the enemy's task force carrier units.

Admiral Ozawa should not have moved in blind. Reconnaissance forays by several snoopers had spotted portions of the American fleet and he should have suspected Nimitz's intentions. All this information, combined with the U. S. diversionary raids on Marcus and Wake Islands, failed however to warn him that an attack on the Marianas was being planned. General MacArthur was already landing forces on Biak Island, New Guinea, an operation that led to the hope that the

U. S. Fleet would steam straight into the area of the Japanese land-based air power.

All Ozawa's hopes were gradually dissipated by the continual attacks by U. S. submarines in the Tawitawi anchorage. U.S.S. *Puffer* sank two tankers. During June 6-7 U.S.S. *Harder* sent the destroyers *Minazuki* and *Hayanami* to the bottom. Then on the night of June 8 the Japanese destroyer *Tanikaze* thought she had a victim when her sonar picked up a trace of *Harder*. Moving in fast to depth-charge the U. S. sub, the skipper of *Tanikaze* was amazed to see Commander S. D. Dealy beat him to the punch with a salvo of torpedoes; the Japanese destroyer buckled in the middle and never saw Yokohama again.

Admiral Ozawa now began to wonder just what was going on; Tawitawi was far from a safe anchorage, and none of his well-laid plans was paying off. In an attempt to relieve Biak by troop-carrying destroyers, he suffered another setback when General George C. Kenney's airmen demolished the destroyer *Harusame*.

Calling on more aid to regain the all-important air strips at Biak, Admiral Soemu Toyoda, now in command of the combined fleet, hoped to lure the American force into this area by reinforcing this relieving group with two battleships, a light cruiser, and half a dozen destroyers. However, before this new group could be formed, American carriers made a new strike at Saipan (June 11) which gave Toyoda the impression that his enemy was moving into the Marianas, and to counter this, a new force was ordered to steam northeast at once to support Admiral Ozawa in the Philippine Sea.

This gives some idea how all vessels gradually moved on to this historic rendezvous. The Tawitawi force left on June 13 but was spotted by the submarine *Redfin*, which quickly reported the move. Three days later Admiral Toyoda sent an important message from his flagship to all flag and commanding officers.

On the morning of June 15, a strong enemy force began landing operations in the Saipan-Tinian area. The Combined Fleet will attack the enemy in the Marianas area and annihilate the invasion force. Activate A-Go Operation for decisive battle.

From that point on about twenty-five Japanese submarines fanned out for advance scouting and patrol duty, but as it turned out they were of no value whatsoever. They afforded no important information, and

they sank no American ship—although they did claim a *Wasp*-class carrier and an *Iowa*-class battleship off Rota and Saipan respectively. But there was no truth in these reports. Seventeen of the twenty-five submarines were sunk by American destroyers, destroyer escorts, or aircraft.

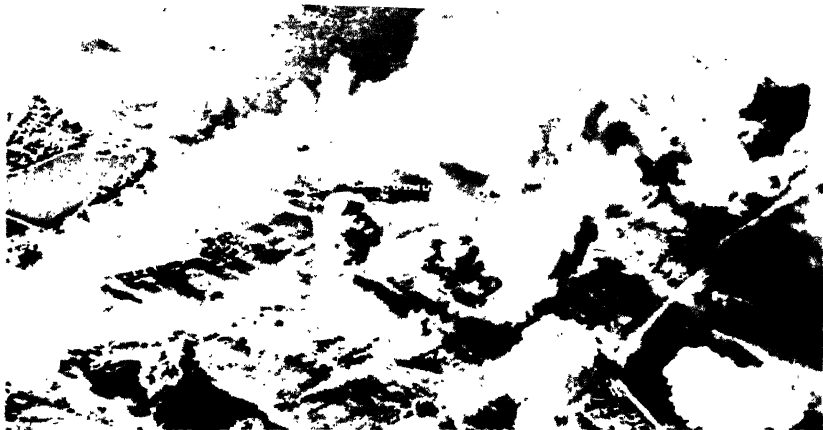
To accelerate this account, it should be explained that the Japanese Mobile Fleet, which moved out from Tawitawi on June 13, steamed northeast toward the Philippines, cut through the Visayan Sea north of Leyte and moved into the San Bernardino Strait between Samar and Luzon Islands where it was first sighted by our submarine *Flying Fish* on June 15. *Redfin* had reported the start of the movement, but at first it was difficult to ascertain just what Ozawa's objective was. From this point the Japanese main body turned east for its rendezvous with the smaller Batjan force, commanded by Vice-Admiral M. Ugaki, and a supply force that had been awaiting the call at Davao Gulf in Mindanao. A second supply force moved on a course parallel with that of Ozawa's, and refueling was carried out in the eastern end of the Philippine Sea on June 16-17, an operation that was quietly watched by lookouts aboard U. S. submarine *Cavalla*.

All these reports were sifted through to U.S.S. *Lexington*, Vice-Admiral Marc Mitscher's flagship, and gradually the stage was set for what proved to be a grim debacle. The forces involved were made up as follows:

	Carriers	Light Carriers	Battle- ships	Heavy Cruisers	Light Cruisers	De- stroyers
Japanese	5	4	5	11	2	28
American	7	8	7	8	13	69

The disparity was even greater in aircraft. The U. S. Fleet had 475 fighters to put up against 222 for the enemy. We had more than twice as many dive bombers and torpedo bombers, and in a general summary we had twice as many aircraft available as did Ozawa. In addition shore-based aircraft available mounted to another 879; the Marines had 352, the Army 269, and the Navy 258 at shore establishments.

Admiral Ozawa placed great reliance on his land-based assistance, for he had two major airfields and several small strips available in the Marianas, to say nothing of the aircraft based at Saipan and Guam. If portions of the American Fleet stayed close enough to these islands, Japanese carrier planes could strike, and then fly on to Guam to

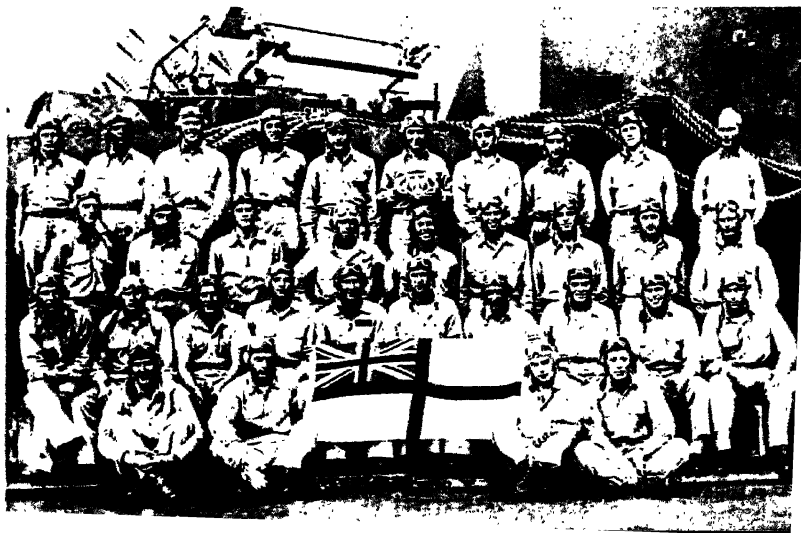


U.S. NAVY PHOTO

*Above, XVII.* What carrier-based planes can do. This is a mop-up scene put on by aircraft from USS *Intrepid* during the air strike against Roi Namur in 1944. On many occasions in the Pacific, carriers played an important role in the amphibious operations.

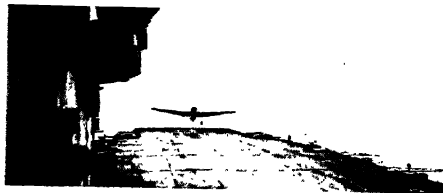
*Below, XVIII.* Hands across the flight deck. The British carrier *Victorious* joined a task force of the U.S. Pacific Fleet and took part in numerous offensive sweeps in the Coral Sea, Southwest and Midwest Pacific areas. At one time both sides exchanged squadrons of planes and pilots and no difficulty was found in carrying out operations and invaluable tactical experience was gained by both groups. Below a group of American pilots off *Saratoga* serving aboard *Victorious*, pose with the carrier's crest and the British White Ensign.

BRITISH INFORMATION SERVICE PHOTO



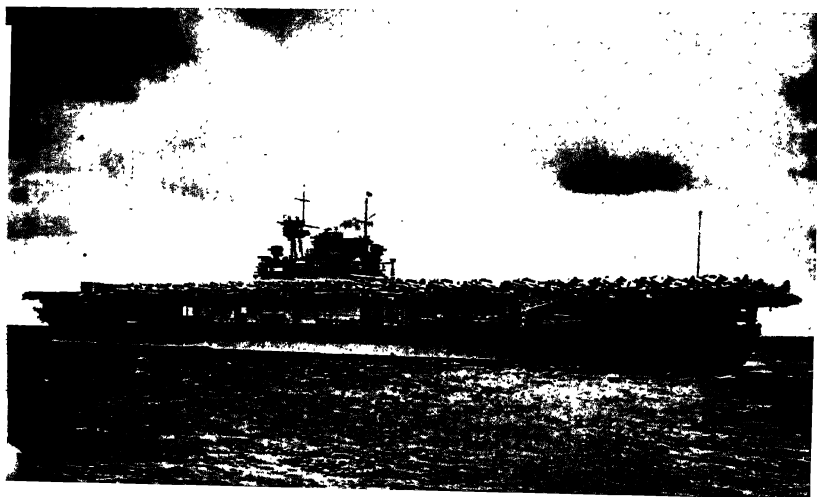
*Right, XIX.* A sequence of events. This Fleet Air Arm Avenger was returning from a strike against the Sakishima Islands in support of the American invasion. The pilot had to make a one-wheel landing and this dramatic series of pictures shows how well he managed. The aircraft was only slightly damaged.

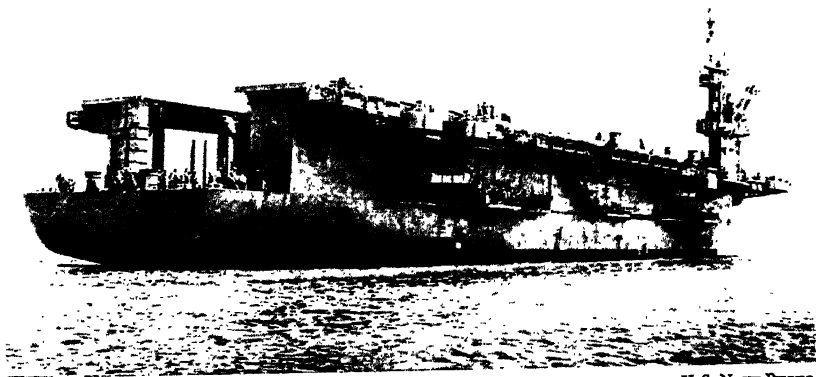
BRITISH INFORMATION SERVICE PHOTO



*Below, XX.* America's most beloved aircraft carrier, the famous "Big E," USS *Enterprise* which served throughout World War II. She fought through practically every major engagement and was only just recently decommissioned and hauled away to the wreckers.

U. S. NAVY PHOTO



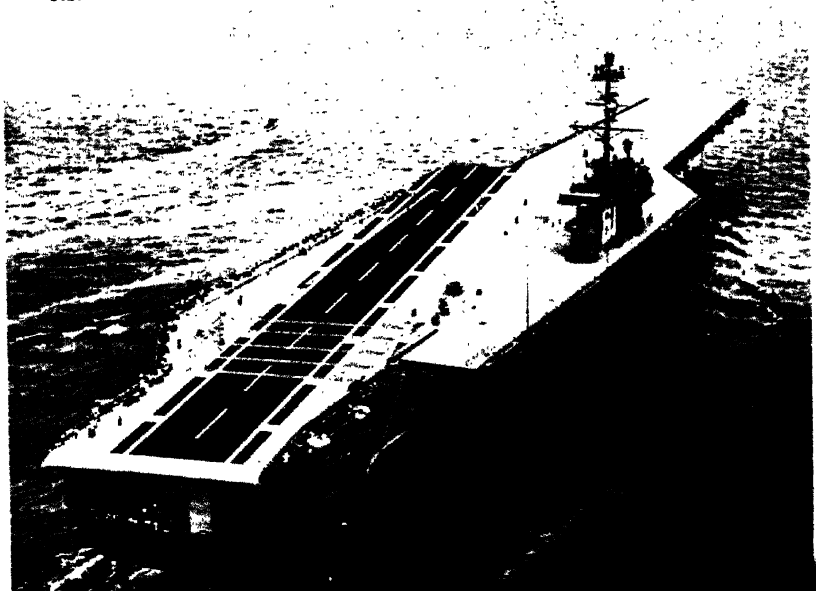


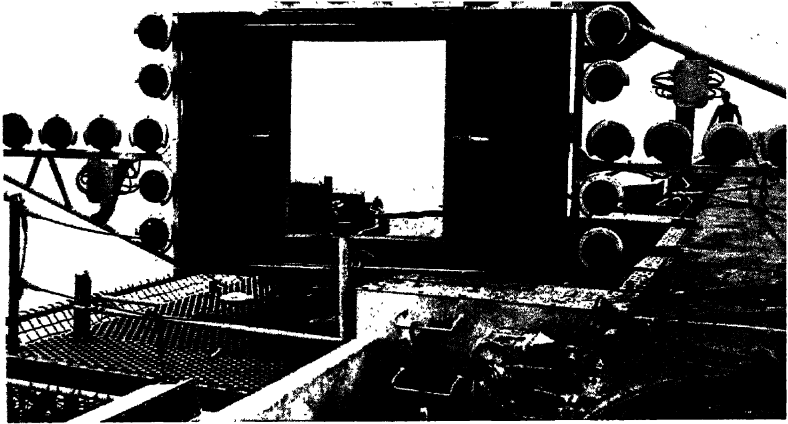
U. S. NAVY PHOTO

*Above, XXI.* The U.S. Navy's first helicopter assault carrier, the USS *Thetis Bay* which was placed in commission in 1956. This vessel was designed to exploit the improved helicopters to be used by the U.S. Marine Corps in amphibious operations. She can carry 20 (HR2s) 22-passenger, or 40 (HRS) 10-passenger helicopters. *Thetis Bay* has a complement of 700 officers and men and accommodations for 1000 Marines.

*Below, XXII.* The modern aircraft carrier. This view of USS *Ranger*, today's attack type, clearly shows the deck layout of angled deck and the five arrestor-gear cables. The black box off to the right, is the housing for the "magic mirror." The angled flight deck allows more rapid recoveries, safer operations and more efficient handling of aircraft on the deck during flight operations.

U. S. NAVY PHOTO



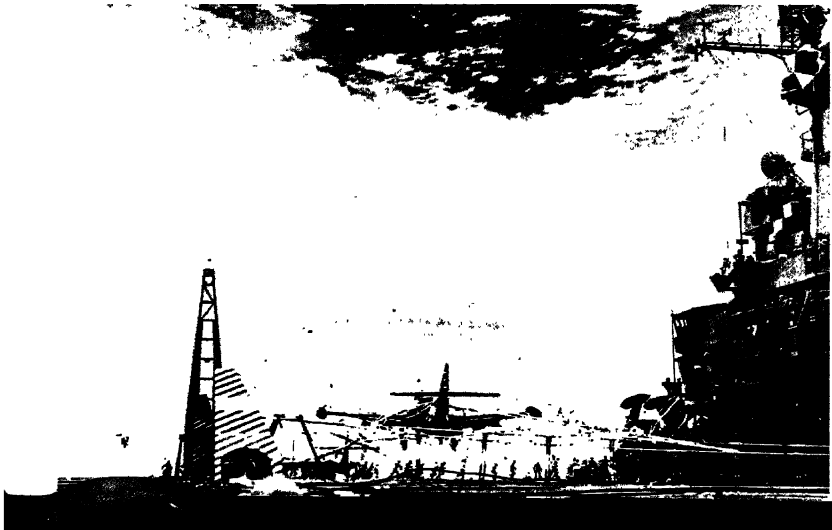


U. S. NAVY PHOTO

*Above, XXIII.* The "magic mirror" as it is mounted aboard USS *Independence*. The lights around the framework take the place of the paddles of the deck landing officer. The mirror is optical glass and costs \$11,000. Using this device, the incoming pilot approaches at such an angle he keeps a bright red light centered in the mirror. The mirror frame can be adjusted for any type plane, to compensate for the height of the pilot in the cockpit, and for the pitch and roll of the flight deck.

*Below, XXIV.* In times of trouble. In the event an aircraft is unable to make a normal landing, due to loss of its hook or damage to the deck arrestor gear, provision is made to immediately erect a heavy nylon net known as the "barrier." Here is shown an F9F-5 Panther, being caught in this lifeguard device, each of which costs about \$10,000. These nets can be used only once.

U. S. NAVY PHOTO





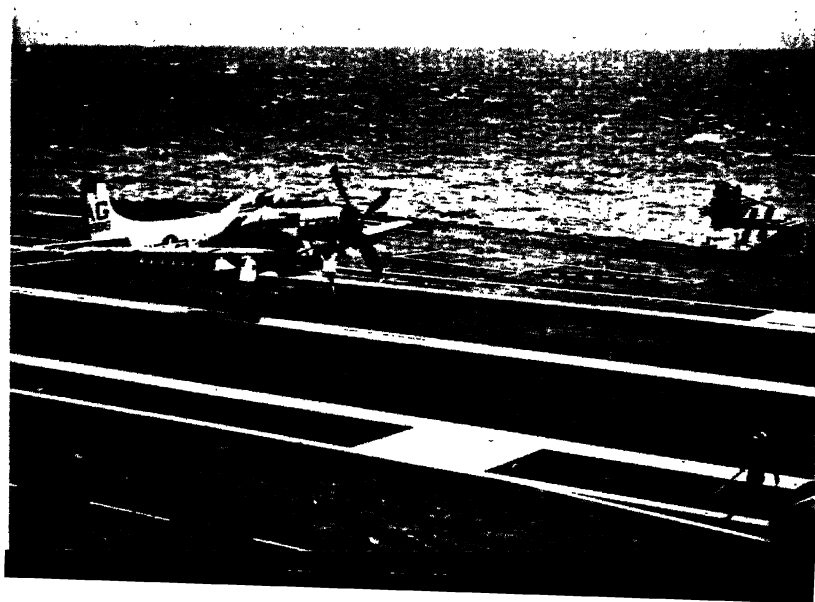
*Right, XXV.* The arrestor gear, all five cables, is controlled from this post several decks below the flight deck. Here a skilled operator adjusts the tension of the cables for each individual aircraft. Light, fast fighters do not require as much arrestor power as a heavy bomber. Here, too, are shown the massive cylinders or "engines" that absorb the tremendous shock of snubbing the incoming aircraft.

U.S. NAVY PHOTO



*Below, XXVI.* Gently does it. This Douglas AD6 (Skyraider) one of the few propeller-driven planes still in service, has picked up a cable and is being snubbed to a halt. The mirror landing device can be seen to the right. The deckhand running carries a special hook used to release the plane's hook from the cable.

U.S. NAVY PHOTO





U. S. NAVY PHOTO

*Above, XXVII.* Catapult take-offs require first class equipment, timing and trustworthy teamwork on the part of the deck crew. Here a plane director is shown guiding an A3D Skywarrior into position for a launching. This work must be carried out in rapid sequence and no mistakes will be tolerated. All is noise, confusion and the lash of wind and jet engine exhaust, but teamwork usually prevails.



*Right, XXVIII.* Rigging for take-off. The heaviest aircraft in carrier service, the Skywarrior has been moved up to the catapult shuttle and a 190-pound steel-cable bridle is hooked in. A restraining cable is also linked to the tail section and a metal lug machined down to break at the required "pull" is inserted in the rig. The rope loop seen hitched to the bridle, rides along to keep the heavy cable from being tossed overboard once the plane has been launched.

U. S. NAVY PHOTO



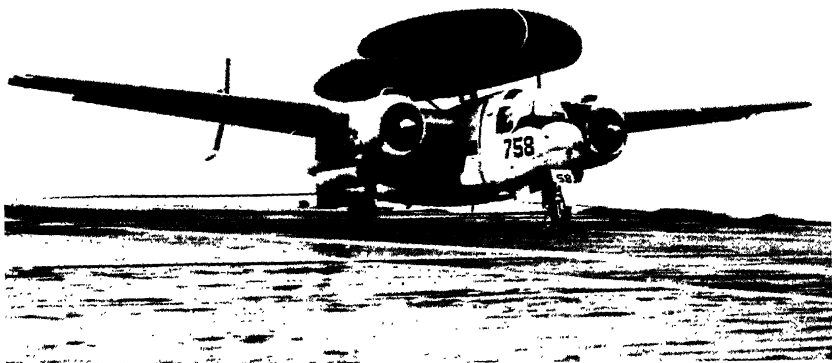
*Left, XXIX. When the aircraft has been rigged for catapulting, an operator, several decks below, who seldom sees the aircraft, notes that all phases of the catapult sequence have been carried out. The author is shown standing before the console from which the aircraft are launched.*

U.S. NAVY PHOTO

*Below, XXX. The heart of all air operations, concerning the handling of aircraft over the carrier, on the flight deck or in the hangars below is the office of Primary Flight Control. This is Pri-Fly activity aboard USS Franklin D. Roosevelt, seen in a special office at the aft section of the bridge superstructure.*

U.S. NAVY PHOTO



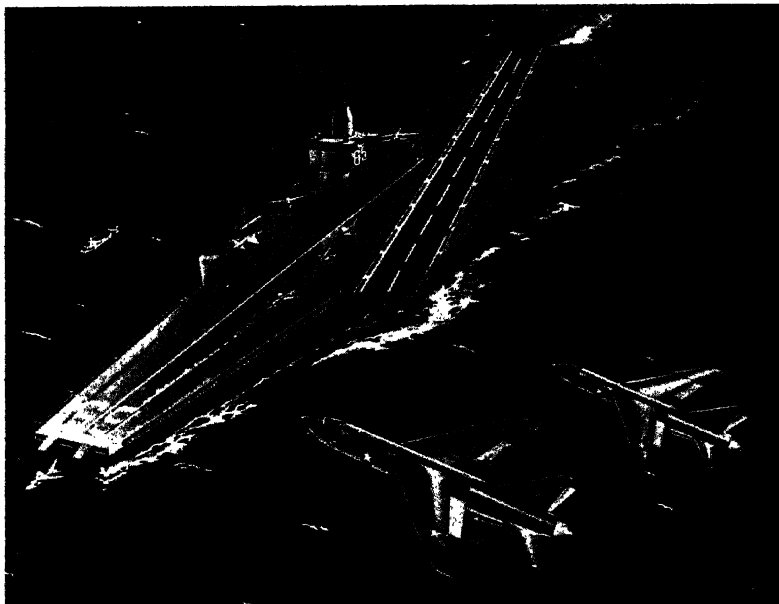


U.S. NAVY PHOTO

*Above, XXXI.* Carrier activity does not always involve fighting or bombing. Important reconnaissance must be maintained at all times and special planes and equipment are continually being designed for the many phases of this work. Here we see the Grumman S2F specially equipped for weather reconnaissance and antisubmarine warfare.

*Below, XXXII.* An artist's conception of the U.S. Navy's first nuclear-powered aircraft carrier, the USS *Enterprise*. She is being built at the Newport News shipyard and at this writing her nuclear reactor was being installed. This vessel is considered an experimental type, and whether any more nuclear carriers will be built depends much on the future pattern of the political picture.

U.S. NAVY ILLUSTRATION



refuel and rearm. Under these conditions their attack value would be increased greatly, and if several hundred land-based planes could give additional co-operation, American aircraft superiority might be canceled out.

Ozawa's program called for his land-based planes to dispose of at least one third of Mitscher's carrier force, and most of Vice-Admiral Turner's amphibious force before any fleet action took place. As it turned out, Japanese aviators were poorly trained, their equipment did not measure up, and postwar investigation discloses that the Japanese admiral had been cruelly deceived in his understanding of the number of land-based aircraft that actually were available.

When the large Nipponese forces were spotted moving through the San Bernardino Strait, Admiral Spruance knew that the Japanese were risking an engagement in the Marianas. By June 19, U. S. submarines *Cavalla* and *Albacore* sank two enemy carriers, *Shokaku* and *Taiho*—these were 30,000-tonners that Ozawa could ill afford to lose. Early that morning Japanese aircraft from the seven other carriers of the Mobile Fleet, were spotted approaching Guam, and in a fight that followed thirty-five planes were destroyed in ninety minutes.

An interesting feature of the above submarine action was that Warrant Officer Sakio Komatsu, who was taking off with a formation heading for Admiral Mitscher's force, spotted a torpedo track streaking for the carrier *Taiho*. This was the one fired by *Albacore*. Komatsu made a gallant attempt to crash-dive on the torpedo, but succeeded only in killing himself; he failed to stop the torpedo and his carrier was lost.

By June 17 American carriers had made important strikes against enemy airfields on Iwo and Chichi Jima, where their bombing and strafing was most profitable. About ten Zekes were shot down in the air and seven more blasted to wreckage on the ground at Iwo Jima. At Chichi Jima no airborne planes were met, but twenty-one seaplanes were destroyed, a hangar burned, and three small freighters set afire. In these two strikes we lost three aircraft and their pilots.

On June 19 more enemy planes began to appear on every horizon, and many turned up west of Guam. It was at this point that the appellation Turkey Shoot was first conceived. The day before Task Groups 58.1 and 58.4—which included *Hornet*, *Yorktown*, *Belleau Wood*, *Bataan*, *Essex*, *Langle*, and *Cowpens*—had moved north, and under the cover of almost gale-force weather hit Chichi Jima again when the Japanese could hardly expect an attack and had their aircraft carefully staked out for a cleanup. Fifty-four carrier aircraft claimed to have

destroyed sixty-three planes on the ground, a claim later denied by Japanese authorities. Today, even the most conservative agree that at least thirty enemy aircraft were disposed of.

Aircraft recovery, after this very satisfactory mission, was most difficult; the seas were heavy and rain came in blinding squalls so that landing on the pitching wet decks was especially hazardous. But only one battle-damaged plane had a serious crash landing.

Prior to all this activity Admiral Spruance had been puzzled by the reports from *Redfin* and *Flying Fish* that the Japanese force consisted of about fifteen naval ships when he was positive that at least forty would make up the opposition. When U.S.S. *Seahorse* sighted the Batjan force moving up from the Biak operation late on June 15, the full picture began to focus in, and Spruance maneuvered his fleet so that he could have the battleships and their antiaircraft batteries available to protect the carriers.

Admiral Ozawa issued several important messages, all couched in terms of attacking and destroying the enemy, but he appears to have had no worthy information as to the disposition of the U. S. carrier fleet, and in truth, he was fighting this very important battle practically blind. What strikes he set up, had to be canceled, and postwar second guessing has it that some of these, had they been carried out, might have been rewarding. But there were so many factors to consider that any decision that Ozawa made, could have been questioned.

By the night of June 18-19 the Japanese admiral planned to keep his main body about four hundred miles, and his van about three hundred miles, away from the American carrier force—or beyond its presumed striking range. He trusted that his aircraft outranged the heavier U. S. Navy planes, and he hoped that his land-based aircraft would carry out their assignments. Furthermore, he believed that the friendly bases on Guam and Rota would be available for refueling and rearming those that had taken off for the initial strikes. All these sanguine hopes convinced Ozawa that June 19 would be a day of great triumph for the Japanese Navy.

On the morning of June 18 all four American carrier groups had so converged that they were within sight of each other. The three strongest were lined up some twelve miles apart on a north-south line, perpendicular to the general wind direction. In this formation one task group could carry out flight operations without interfering with the others. Vice-Admiral Willis A. Lee, Jr.'s battleship line was formed up in advance, leeward on the enemy side and about fifteen miles west of

the flagship *Lexington*. The weakest carrier group was to afford air cover for the battleship line. In this arrangement the fleet moved westward during the daylight and retired eastward at night, so as to reduce the possibility of the enemy passing them in the darkness.

Toward midnight news was received that the enemy's fleet might be about three hundred miles WSW of the American fleet's position. Admiral Spruance did not double back immediately, but continued to increase his distance from the enemy, and by daylight he was in no position to attack. The optimum launching distance was between 150 and 200 miles. The maximum distance, if the bombers were to return, was 300 miles. At this point Admiral Mitscher suggested that they turn immediately, a move that would put the carriers in an ideal position for launching an air strike at daybreak.

After some lengthy consultation with his staff, Admiral Spruance rejected the suggestion. He had been through some of this before, and he had respect for the manner in which Japanese carriers had been handled. He had no intention of risking an "end run" maneuver in which the enemy feinted at the center and then sent other detachments around the flanks. This trick had been tried in the Coral Sea engagement, and again at Guadalcanal, and it was a smart naval movement that had been attempted at Midway.

War plays tragic tricks. What proves out three times in a row, turns up to be the booby move on the next try. On this occasion Admiral Spruance appears to have been wrong. Admiral Ozawa was playing it straight and had but one intention; to meet the U. S. Fleet head-on, and then start throwing everything he had. Spruance could not know, of course, that the Japanese admiral was much in the dark about where the U. S. fleet was, and was in no position to devise any tricky maneuvers.

During all this pro and con, the submarine *Finback* reported seeing searchlights well northwest of the enemy's *presumed* positions. Coming at 1:15 A.M., this news had everyone puzzled, for why would a naval force turn on searchlights at this point.

The strategists figured it could be a smart stratagem. Admiral Spruance decided to take no chances, and continued eastward. He also had a bad break, for he was not advised that a U. S. Martin Mariner reconnaissance plane had made a very definite radar contact on some forty warships that were aligned in two groups at a position only seventy-five miles northeast of the presumed position of the enemy fleet. It was learned later that this fix was absolutely correct, but the

report was not transmitted promptly, or Spruance might have doubled back on his westward course.

Actually, at 2 A.M. the two fleets were about three hundred miles apart, and had Spruance returned to his westward course, and had Ozawa continued on, the American carrier aircraft would have been within easy striking distance by dawn, but the Martin Mariner report did not reach Spruance's bridge until nearly eight hours had passed.

Since the Battle of the Philippine Sea several explanations have been offered, and all reflect the minor foul-ups that beset the complicated system of modern communications. A trailing antenna was not reeled out for long-distance transmission; the Mariner commander received no formal acknowledgment of his report so he hurried back to his base and filed his message from there. A nearby Navy tender *may* have picked up the message, but if so, someone failed to pass it on to Spruance. In all probability, however, atmospheric conditions in the area west of Saipan were such that most radio transmission was faulty. In the final analysis we must presume that it was another communications failure for which no one could be blamed.

In the end the error contributed little to the outcome of the action; it simply gave postwar strategists some sparse tinder or fuel with which to heat their opinions, views, or criticisms. The fact remains that Admiral Spruance continued his easterly course, a Japanese reconnaissance aircraft out of Guam found the U. S. Fleet, dropped a flare, and returned to its base. *Enterprise* launched fifteen radar-equipped Avenger torpedo bombers to make another search, and other routine reconnaissance forays were carried out, but for some unaccountable reason the Japanese Fleet was not located.

By 5:20 A.M. another snooper turned up, took a look, and escaped. At 6 A.M. another enemy aircraft was sighted and shot down only thirty-seven miles SSW of the U. S. carrier fleet. By that time it must have been obvious to any cabin boy that Admiral Ozawa was moving fast.

Daylight gilded the sky at 4:30 that historic morning as the sun, climbing over the horizon, transformed the service gray of superstructures to ceremonial gold, and the trade winds moved a few cloud muffins about. Ceiling and visibility were unlimited. Atmospheric conditions were such that all aircraft dragged vapor trails, a spectacle that was to help American pilots to intercept attacking planes with little trouble. In other words, it was a perfect setting for a dog fight, but



even now not one man of the 98,618 Americans in Task Force 58 had any idea where the enemy lay, or when he would strike; they just sensed that something unusual was in the air, and probably wondered why so mighty a fleet was steaming east when the enemy, obviously, would be approaching from the west.

One hour later when our fleet was about 155 miles W by S of Tinian, all routine duties were resumed. Dawn-search, combat-air, and antisubmarine patrols were sent up. Then at 6:19 A.M. the fleet changed course to WSW, a direction that could not be maintained for long, since the carriers had to head into the southeast wind to launch planes, and as a result, by 10:23 it was only a few miles farther west than it had been at daybreak. This is a point to remember when amateur naval strategists attempt to assay the value of the aircraft carrier. No matter where the fleet wishes to go, or how fast, the carriers must always turn into the prevailing wind to launch or recover aircraft.

At this point Admiral Spruance suggested to Admiral Mitscher that Guam and Rota might be ripe for a few neutralization strikes, a decision that was to have an important bearing on the outcome. Admiral Mitscher, who by now found himself in the position of having to fight a defensive battle close to the lee side of several enemy land bases, and on the windward side of enemy carriers, was not taken with the idea of a strike against Guam, and argued that he did not have suitable bombs for that type of ground-installation attack. He did agree to keep Guam under fighter-plane surveillance. Truth be known, there were only fifty aircraft of all types at Guam, and although this was a mere pittance, fifty planes handled intelligently could have been a real threat to surface ships.

As a matter of fact the first enemy strike was made at 5:30 A.M. by a bomb-carrying Zero that flew out of Guam, but was shot down by anti-aircraft fire from U.S.S. *Yarnall* as it was attempting to attack two picket destroyers. This flare-up of little importance, ushered in an hour of comparative calm until a combat-air patrol off *Belleau Wood* was ordered to intercept a bogey over Guam, then some one hundred miles away. On arrival these Hellcats were attacked by a number of planes that took off from Orote airfield. Holding their own, and reporting the engagement, they maintained contact with the enemy until help was sent from *Belleau Wood*, and from off the decks of *Cabot*, *Yorktown*, and *Hornet*. While not actually deserting the area, the enemy aircraft avoided action as much as possible. A few were trapped and shot

down, but many eventually returned to their field and taxied into concealed dispersal bays. They may have been ordered to do so in order to save them for more important engagements.

Shortly after 8 A.M. a group of enemy aircraft was spotted about eighty miles to the southwest, heading toward Guam. They were probably reinforcements from Yap or Truk. Each U. S. task group was ordered to launch twelve Hellcats for interception. The original Hellcat group had been ordered back at 8:24, but the new formations were soon involved in heavy air fighting in the Guam area and finally accounted for thirty-five Zeros and bombers. Then, as the victorious Hellcats turned to start back, more Japanese planes were to be seen taking off, presumably to carry out Admiral Ozawa's orders, but most of them flew into the claws of the Hellcats and were severely mauled.

During all this fringe action Admiral Ozawa had come to some definite decisions, and probably realized that both fleets were now only 250 miles apart. Mitscher's force was maneuvering back and forth one hundred miles west of Rota. Guam lay about the same distance to the southeast of the carrier fleet; Saipan and Tinian were about 140 miles northeast. Ozawa's first, second, and third carrier divisions were deploying back and forth on a northwest-southeast pattern, and only his aircraft crews ever saw Spruance's task force. In this we have a clear example of carrier warfare. This was not just a battle between surface fleets that were using long-range aircraft as their weapons. Both sides had the problem of carrying out, or preventing, a very important amphibious operation. The battle for Saipan has since been considered the decisive battle of the Pacific war. Its loss ended all hope for a Japanese victory. The Battle of the Philippine Sea was not just a turkey shoot, or an over-all attack against the enemy's carrier force; it was the blow that sealed the victory at Saipan.

The actual battle opened exactly at 10 A.M. At that minute Admiral Mitscher is said to have sent out the "Hey Rubel!" message—the old circus cry to his Hellcats over Guam. Formations of enemy aircraft had been picked up on radar when they were 150 miles west of Spruance's forces. At 10:20 the whole task force turned into the wind, a full gaggle of fighters was launched, and the Battle of the Philippine Sea was on.

Referring again to the Japanese records, it is known now that their search planes were first sent out at 4:45; one flight was made up of Navy float planes that picked up traces of two of our task groups. Of

the first fourteen search planes sent out, only seven returned, the others tangled with Mitscher's dawn-search group and the carnage began. A second group was trapped by elements of fighter interceptors, and was badly cut up. A third, composed of thirteen planes, carried out an important reconnaissance mission and lost but three aircraft.

Following this, Admiral Ozawa launched his first raid force, composed of sixteen Zeke fighters, forty-five other Zekes that were rigged to carry bombs, and eight torpedo-carrying Nakajimas. This launching was made around 8:30, and was picked up by the U. S. battleship force radar at ten o'clock when they were, as stated above, 150 miles away. At 10:10 Mitscher issued an order that every available fighter plane be alerted, and nine minutes later he sent them away.

From that time the whole United States fleet began a series of surface maneuvers that were totally unlike those used when battleships were the important capital ships. Instead of steaming for strategic battle areas from where the big guns could be trained on opposite numbers, attempting to complete the traditional "crossing of the T," moving to gain the most favorable light, or to cut off the enemy from his home shelters, Admiral Mitscher ordered every vessel in his command to "stay on course into the wind." This, of course, allowed continued flight operations that were more important than attempting to bring the enemy within battlewagon gunfire. The "guns" were the aircraft, the "shells" the bombs or torpedoes they carried, and the "range" was limited only to the fuel tankage of the aircraft.

It might not be admitted universally, but the battle was now in the hands of the fighter directors whose job it was to deploy fighter aircraft to meet successive attacks. In this case most of the responsibility rested on the shoulders of Lieutenant Joseph R. Eggert, aboard *Lexington*. Lieutenant Eggert had to see that enough Hellcats were vectored out to intercept each enemy raid, and that an adequate reserve was kept in hand to use in later raids. All this was done by voice-radio contact with other group fighter directors, Lieutenants C. D. Ridgway, R. F. Myers, E. F. Kendall, J. H. Trousdale, and Lieutenant Commander F. L. Winston. Each task-group fighter director maintained general control over his own group but often allotted intercepting planes to the fighter directors of individual ships, who in turn controlled these planes until their missions had been accomplished.

Considerable difficulty was encountered in handling the high-frequency radio gear since all this took place at the time when the Fifth Fleet was in the process of making many important changeovers in

communications equipment. Nevertheless, although the channels that were available were overcrowded, Lieutenant Eggert and his confreres met every situation. Throughout the battle interceptions were made and directed intelligently, sufficient aircraft were made available to meet each attack as it developed, and in practically all cases were properly stacked to provide the initial altitude advantage so necessary to head off any high flying formation. Co-ordination between the fighter directors in this engagement was as nearly perfect as battle conditions allowed, and in many cases the vital interceptions were made like clockwork.

Once the battle seemed imminent, Admiral Mitscher signaled all ships to expect repeated attacks, and by 10:36 the first enemy raid force, composed of more than sixty aircraft, was only sixty miles away. While Mitscher's message was flashing out, Hellcat fighters, stacked between 17,000 and 23,000 feet, sighted the Red Ball craft and a joyous tallyho rang out. The first punch was delivered by eleven Hellcats from the deck of *Essex*, led by Lieutenant Commander C. W. Brewer.

The enemy pack consisted of more than twenty Zekes flying in a tight formation at eighteen thousand feet; sixteen more were riding cover above and behind. Commander Brewer selected the leader of the main formation and opened fire from three hundred yards. His sight was true, and the Japanese plane exploded immediately. Brewer, unable to change course, had to slam through the debris and a curtain of flaming fuel. He pulled up hard and fired at another and saw large chunks of metal fly off before this enemy burst into flames and dove into the sea. Turning fast, Commander Brewer then went for another Zeke, and his short burst took out the enemy's wing-roots, so she folded everything and went down.

Making a quick survey, Brewer saw a Zeke heading for him, but by maneuvering fast he turned the tables and came out on the Jap's tail. Three short bursts forced the Zeke to half-roll violently so that he continued on his back. Brewer stayed with this acrobat, pouring burst after burst into the wings, fuselage, and cockpit until at last the enemy fighter burst into flames, wrenched itself into a tight spiral and hit the drink.

This particular Zeke pilot had an unfortunate wing man who was taken care of by Brewer's wing man, Ensign R. E. Fowler. Fowler then accounted for two other Zekes and a Mitsubishi Navy fighter.

Lieutenant (jg) G. R. Carr, who led the second division of four

Hellcats, chipped in to help Brewer sheep-dog the enemy formation on the first overhead runs. Carr contributed generously to the day by taking on the first bomber he saw and blowing it to bits. He, too, had to bore through a curtain of fragments, but when he emerged he came out with his nose smack on a second bomber. He fired, because this aircraft was in his way, and that too burst into flames and screwed into an uncontrolled spiral.

Then, deciding to get his breath and pull his formation together, Lieutenant Carr was attacked by a Mitsubishi that became decidedly aggressive and the American lieutenant had to nose down to a 450-knot dive and wriggle out with an aileron roll before he could shake off the Mitsubishi. Once in the clear, he roared back for the action level and soon found himself all alone with a Japanese bomber that was moving in for an attack. Outmaneuvering the heavier craft, Carr put a precision burst into the engine cowling and wing root, which ignited a hot fire and an eventual explosion. He yanked out of that tangle and spotted two more bombers that were flying a parallel course some two thousand feet above. Carr worked into a stern position, gave one a short burst, and saw something bulky leave the plane, which he considered might be the pilot, but he was too busy to make a detailed examination. He skidded over to get on the tail of the second, pooped off a long splashy burst, and that bomber went down in flames. He followed it down to get in a final burst but saw it explode before he could draw a good sight. With little ammunition left and no more aircraft to shoot at, Lieutenant Carr then returned to the *Essex*.

Another fighter element off *Bunker Hill*, led by Lieutenant Commander R. W. Hoel, answered the initial tallyho in time to peel off and get into what seemed to be Brewer's private war. Two Zekes and a bomber were knocked down by Hoel, but while polishing off the latter, a Zeke slithered into his tail area and fired several bursts before Hoel's wing man chased him off. There was enough damage to justify a return to the carrier, and on the way Hoel found himself in a new difficulty; his stick suddenly jammed in a forward position and the Hellcat went into an uncontrolled power spin, and he had to bail out. Luckily, he was soon picked up by one of our destroyers.

It is gratifying to relate that Commander Hoel's was the only aircraft lost during this interception. Observers aboard the picket destroyers saw nothing of the action, since it was carried out at such a high altitude. One seaman scratched his head, and pondered: "What-

ever was going on up there, I have no idea, but Jap planes were falling like overripe apples."

Another interesting observation was made by Brewer and Carr who related that the enemy seemed to work under no sound defense tactics. When the American planes moved in, the bombers generally scattered instead of maintaining a tight formation to make the most of their gun power. The fighters made no attempt to provide a protective cover but instead staged a dizzy set of frantic aerobatics, obviously obeying some law of self-preservation. And as a result some forty-two of the sixty-nine planes that made up Ozawa's first attack failed to return to their decks.

It should be explained that Brewer's fighter squadron did not claim all these interceptions, and rightful credit was given to fighters off *Cowpens*, *Bunker Hill*, *Princeton*, *Lexington*, and *Enterprise*. Some of these fighters were directed to a 23,000-foot level, and kept flying westward, in the hope that another Japanese formation would be following in. Unfortunately, Ozawa's second attack force did not take off until 8:56 A.M.

Not all the planes of the first assault were successfully driven off. About forty of the full complement of raiders avoided contact with the F6Fs, and headed for the main targets. What few managed to make a direct strike had to be satisfied with an attack on the picket-line destroyers, such as *Yarnall* and *Stockham* which were well west of the battleship line. Their antiaircraft gunners stood firm, however, and the raiders were driven off.

Three or four bombers broke through and reached Admiral Lee's battlewagons which by now were making twenty-two knots, and moving in a circular formation. One bomber scored a direct hit on *South Dakota*, a brave effort, considering everything. The hit killed twenty-seven men and wounded twenty-three, but no serious mechanical damage was suffered, and the veteran battleship maintained her station. *Minneapolis* took the effect of a near miss, but none of the air raiders reached any of the carriers. By 10:57 the first major attack had been completely broken up.

The situation must have been most disheartening, but at 8:50 Admiral Ozawa decided to counter with a very large raid on the U. S. carrier fleet. This pack was made up of forty-eight Zeke fighters, fifty-three Aichi D4Y dive bombers, and twenty-seven Nakijima torpedo bombers. Of this assigned covey 119 planes actually got off the deck

without the usual aborts or engine trouble. Once they had headed east a new foul-up beset them. When they were making their rendezvous and forming into their proper elements a large number of them inadvertently flew over Admiral Kurita's van force where they attracted the attention of overly excited antiaircraft gunners; two planes were disposed of and eight more seriously damaged before the error was noted. The damaged aircraft had to turn back and seek sanctuary aboard their own carriers.

The remaining Japanese planes huddled together in one mass group and were picked up quickly by U. S. radar when they were 120 miles away, which gave the Hellcats off *Lexington* time to get into the air and prepare a reception. Commander David S. McCampbell, who led a dozen fighters off the carrier *Essex*, went into the second half of this action at about 11:39. The commander first took on a dive bomber, sitting out on the coffin corner of a tight element, and with just a short spurt his target burst into fire and then exploded. The pattern of debris forced Commander McCampbell to zoom over the main formation and fly into the area where every gunner in the group could potshot at him, but he reached the other side safely with his wing man, Ensign R. E. Foltz, still hanging on. The commander then found time and opportunity to destroy two more dive bombers, while Foltz paid his way by getting two others.

More Hellcats followed McCampbell's example, and when this fight was over thirty-two Zeke fighters, twenty-three torpedo bombers, and forty-two dive bombers failed to return to Ozawa's carrier force. About seventy of these casualties occurred in the initial interception—the sky was streaked with planes falling in flames, or screaming down minus their wings. The remainder, seriously damaged, were lost as they tried to return to their flight decks.

About twenty Japanese planes did break through the American defense, and reached a position where they could attack. The *Stockham*, a destroyer, was under fire for nearly twenty minutes but was not damaged seriously. The carrier *Yorktown*, with thirty-six of her fighters in the air, flagged off sixteen more as a secondary intercept. Heavy ack-ack fire from *Alabama* held the raiders in check, however, and two torpedo bombers that were heading for *South Dakota* were also diverted by *Alabama*'s gunfire. Two others with designs on *Indiana* were broken up, but a torpedo bomber smacked its missile against this battleship's waterline. Luckily the torpedo did not explode. Two near-miss bombs splashed *Alabama*, and *Iowa* had to wriggle quickly to

evade another torpedo-bomber attack. All this action took place between 11:50 and a few minutes past midday.

Half a dozen dive bombers that eluded the interception and the battle fleet's ack-ack fire, found Admiral Montgomery's carrier task group shortly before noon. Four of them headed straight for *Wasp*. No direct hits were scored, but one bomb burst overhead prematurely, killing one man and wounding twelve others. *Wasp's* flight deck was covered with chunks of phosphorus that ignited when stepped on and this created some confusion while first-aid measures were going on.

*Bunker Hill* was attacked by two dive bombers that only scored a near miss, but fragments from these bombs killed three crew members and wounded seventy-three, one of the plane elevators was damaged, and the hangar-deck fuel system was ruptured. This started several fires but smart damage control soon quenched them. The two attacking dive bombers were shot down by the screen-defense gunners, and two others suffered the same fate.

Admiral Reeves' task group, which was sailing a short distance to the north, was attacked by a small formation of torpedo bombers. One torpedo exploded in the propeller wake of *Enterprise*, but did no damage. Two other torpedo bombers in a shallow-glide attack against *Princeton* were broken up by antiaircraft fire before the pilots could release their projectiles. Two minutes later a third torpedo bomber attacked *Princeton*, but antiaircraft fire from the flagship *Lexington* flamed the attacker, and *Princeton* had to make a quick change of course to avoid being hit by the falling aircraft.

During all this a Japanese air co-ordinator—a plane that carried an airborne combat director—played an amusing, if involuntary role. Early in the battle Admiral Mitscher's flag communicators tracked down the enemy co-ordinator's circuit, and Lieutenant (jg) Charles A. Sims stood by to translate the Japanese orders into English. In other words Lieutenant Sims was warning all American interceptors just what the Japs would do next. Later on when someone suggested sending out a patrol to shoot down the enemy co-ordinator, Admiral Mitscher grinned and said, "No indeed! He kept Task Force 58 well informed throughout the action. Let Little Joe go home safely. Who knows, we may be able to use him again."

Meanwhile the islands of Guam and Rota had to be watched while our carrier fighters were engrossed in the big interception of Ozawa's raiders. Throughout the action a few Hellcats from *Lexington* main-



tained a constant patrol to make certain that no land-based strike could be organized or launched. Then, about 10:30, *Hornet* sent off an element of Helldivers, Avengers, and Hellcats to beat up Orote airfield on Guam. They were in no way harassed by the enemy, and the bombing pattern was very good and most effective. Later Lieutenant Commander Ralph Weymouth of *Lexington* took a flight of Helldivers over and tried dropping armor-piercing 1000-pound bombs on grounded aircraft. These missiles made very deep holes in the surrounding area but were not very destructive to aircraft or runways.

By 11 A.M. all available planes, including bombers, were sent out to perforate the island airfields, and in this instance they did such a masterful job that most of the enemy carrier planes that sought hospitality later that day, went base over apex into the still smoking shell holes. About 2:30 a large formation of Ozawa's fourth attack was chased into Guam, and all but nineteen of them were shot down as they sought an airstrip. As can be imagined, such run-and-chase actions provided mixed victories and defeats.

Four Hellcats, led by Lieutenant Commander C. W. Brewer who had been so successful earlier in the day, went down after a Japanese torpedo bomber, and almost immediately Brewer's element was set upon by fifteen Army Zero fighters. Commander Brewer, Lieutenant (jg) J. L. Bruce, and Brewer's present wing man, Ensign Thomas Tarr, were shot down and killed, but in reprisal the Japanese fighter formation was hacked to wreckage.

This side show at Guam ran up some serious losses. Six Hellcats and one bomber were lost along with all their airmen; four of these seven were hit by enemy antiaircraft that was especially intense and accurate.

In comparison, the main interception fights involved about three hundred American planes, and of these only twenty-three were shot down, and six more written off during take-offs or landings. The net casualties, after rescues, were reported to be twenty pilots and seven air crewmen killed, along with four officers and twenty-seven enlisted men in the three vessels that were hit or near missed. These are official figures, but they are difficult to accept when we have been told that three crew members were killed and seventy-three others were wounded aboard *Bunker Hill* from fragments of an enemy's near miss. These are the problems that beset the historian when consulting many available sources.

The third Japanese raid consisted of forty-seven aircraft; fighters,

fighter bombers, and torpedo bombers. These were launched from the carriers *Hiyo*, *Ryuho*, *Junyo*, and *Zuikaku*. They failed to find any American ships at the expected areas, so they headed for Rota and on the way were diverted when Admiral Montgomery's carrier group was finally sighted. Six of these aircraft evaded the combat-air patrol and appeared above our carriers when they were recovering planes. The leaders started their attack glide from six thousand feet, but an alert lookout aboard *Mobile* spotted them and opened fire. This alerted *Wasp* which turned sharply as the bombs began to fall. Three more dive bombers came out of the clouds and made for *Wasp* and *Bunker Hill*, but the attack was fainthearted and no damage was inflicted. In this foray eighteen planes off *Zuikaku* became embroiled with a formation of Hellcats, and nine were soon shot down.

Another formation that had gone to Guam was trapped to some extent. They dropped their bombs, and were forced into a fight with a number of Hellcats off *Cowpens*. This element was led by Commander Gaylord B. Brown who, when he saw the size of the Japanese formation, gave a loud tallyho, and was soon joined by Commander McCampbell from *Essex*, and eight fighters off *Hornet* that were led by Lieutenant William K. Blair. These twenty-seven Hellcats shot down thirty of the forty-nine-plane Japanese formation that was attempting to land on Orote airfield; of the nineteen that did land safely, most of them were so badly damaged they had to be discarded.

It was obvious that with such figures Admiral Ozawa had lost his battle. More than half of his original complement of aircraft had been wiped out, and with this Admiral Mitscher allowed several of his carriers to secure from General Quarters and relax to a condition of readiness "One-Easy." A search mission was sent out but it failed to find the enemy fleet. It did encounter Japanese search planes and some of the fighters on this assignment failed to return.

And so ended the greatest carrier battle of the Pacific campaign. The forces that participated were between three and four times larger than those at Midway, and the air victory was so complete, the Japanese were never able to gather such a force again. June 19 afforded eight hours of continuous action in the air, maintained, directed, and supported by fighter directors, information centers, deck crews, and the accuracy of the battle-line antiaircraft gunners. Without all this, the skill, initiative, and courage of the aviators would have been wasted.

The U. S. submarines *Albacore*, *Stingray*, *Finback*, and *Bang* per-

formed important tactical tasks. *Albacore*, commanded by Commander J. W. Blanchard, sighted and sank the Japanese 33,000-ton carrier *Taiho*, and *Cavalla* torpedoed the carrier *Shokaku* in a classic submarine-carrier fight, just as the flat-top was recovering her aircraft.

Up to this point everything had worked right; the Japanese air attacks had been beaten off with neatness and despatch, everything had turned out according to plan—everything, that is, except the completion of the action. With most of his aircraft safely back aboard, Admiral Mitscher might have completed the task and wiped out the First Mobile Fleet completely. The American skippers knew what had happened to the Japanese air fleet, and could they have found the enemy in time, might have had a sitting-duck shoot. At this time Admiral Ozawa was completely in the dark, for he had little idea what his aircraft losses were, since he was under the impression that most of them had landed safely at Guam or Rota. What few pilots did return assured him that at least six, and perhaps eleven, American carriers had been sunk.

At the opposite end of the field neither Admirals Mitscher nor Spruance had any idea where the Japanese fleet lay, or where it was heading. Apparently only the submarines had any information, and they had gone deep after sinking the two Japanese carriers. One or two reconnaissance planes went out and returned with conflicting data concerning the disposition of the enemy fleet.

After milling around trying to decide whether to refuel his force where he was, or to move farther west, Admiral Ozawa chose to play it safe and rendezvous with his tanker fleet. But no one aboard an American ship knew of this move, and since the Japanese admiral maintained rigid radio silence, it was impossible to obtain a "fix" on him. Admiral Spruance decided to attack on June 20—"if we know the enemy's position with accuracy." That was the kicker. As at Coral Sea and Midway, we were shy of accurate information, and we must assume from all available records that our search planes hardly held up their end.

Only two night searches were carried out and these brought in nothing. Admiral Mitscher apparently felt that his flying men had had enough for one day, to say nothing of the weary deck crews who had been on their feet for hours on end. Actually, no real effort was made to seek out the retreating Japanese Mobile Force, and had Mitscher sent out an aggressive search force, there might have been another

story. As it was, late the next afternoon when Ozawa's force was still trying to obtain some order out of many attempts to refuel from the tankers, he was in a very hazardous position and any real search might have trapped him. He also learned late that afternoon the full extent of his air defeat—the loss of 330 planes—leaving him about one hundred fit for operational duty. Still, he continued to hope that the land-based equipment on Iwo, Yap, Truk, and a few from Guam would be available, and optimistically planned another strike against his foes. In the meantime his cruiser *Atago* had intercepted a U. S. Navy message that indicated that at last Admiral Mitscher had been advised by an Avenger pilot from *Enterprise* of the relative position of the enemy fleet. This message was so garbled in transmission that it was almost useless to Ozawa. We do know now that actual contact was made with the Japanese fleet at 3:40 P.M., June 20, by Lieutenant R. S. Nelson, the first U. S. carrier pilot to sight an enemy combat ship. Garbled or not, the information received was sufficient to cause the Japanese admiral to call off his fueling attempts, change course from west to northwest, and move off at twenty-four knots.

By now Mitscher had been advised that the enemy force had been broken up into three groups, and was moving slowly, indicating that refueling was under way. Whether the positions given were exact or not is difficult to know, but Admiral Mitscher was under the impression that the nearest enemy group was at least 275 miles from his carrier decks. Planes would be launched at their maximum range, but it was now getting on toward four o'clock, making it necessary to recover them after dark. As pointed out, not too many carrier pilots had had night training, and those that had were faced with such a long flight out and back, they were likely to become exhausted and incapable of the flying skill required to return safely. Moreover, at least four hours would be required to recover all planes, at which time the carrier force would have to steam upwind, or on an easterly course. This would take them well away from the presumed enemy position at high speed. Any such strike would have to be a one-shot task. A lot of men and planes could be lost, and few aircraft would be operational for a next-day dawn attack.

When the word came through Admiral Mitscher was perched on a high stool in one corner of the flag bridge of *Lexington*. All around him were his carriers, their decks cluttered with aircraft and pilots awaiting his signal to go out and finish the job. Mitscher knew that darkness would fall in four hours—but tomorrow would be too late.

A few steps away in flag plot where a torrent of radio insistence chattered, Captain Arleigh A. Burke was pounding his fists and chewing on a cold pipe. The navigator tried an old joke on Commander Gus Widhelm, but it fell flat. The deputy chief, Captain Truman Hedding, gave some pretense of scanning through a dog-eared war novel. The radio gave out with a message from another search plane: "I see 'em . . ."

Widhelm slipped through to the flag bridge and grinned at the admiral. "They see 'em, sir. We've got 'em."

Mitscher twirled, and slid down from his stool. "I want to see the whole message."

Before the transcript could be snagged off the file, another report came through. The monitor clerks began clacking their typewriters again. Far to the west a search pilot, flying at the extreme range of his sector, had noticed strange dots and ripples flickering in the sun's blinding path. He pointed them out to one of his crewmen, and the radioman reached for his key and tapped: "Enemy force sighted. Position . . ."

The navigator wrote the position on a slip of paper and passed it to Widhelm. Gus whistled and handed it to Admiral Mitscher who pondered, looked up, and asked, "Can we make it?"

There was a period of strained silence. None of the staff officers wanted to take the responsibility or give an opinion. They had all flown against enemy defense guns, and made long flights back when they were totally exhausted, but none had tried it at night over such a stretch of black water.

Widhelm finally said, "We *can* make it, but it's going to be tight, sir."

Mitscher looked out at his carriers, squinted for a second or two, and then spoke firmly: "Launch 'em!"

A white flag with a red diamond in the center went jerking up the yardarm aboard *Lexington*, and the launching officer began to twirl a small checkered flag. The pilots of Fighting 16 who had been staring at their maps, and looking at the teletype sheet dancing across a blued frame, couldn't believe a word of it. "You mean we've got to fly out *there*?"

There was no horseplay, no racing up the ladders, none of the pre-flight tense gaiety. The pilots took plenty of time to buckle their flight gear, adjust shoulder holsters, back packs, and life jackets, and zip up coveralls. They shook their canteens, wiped off goggles, and

slapped their pockets to make certain they had jackknives, cigarettes, lighters, handkerchiefs, and good-luck pieces. There was no wild jostling at the bulkheads and hatches. No one joked. This mission was one for the book.

Sy Seybert made certain he had his good-luck silver dollar. Alex Vraciu, who was to lead the third division, was the Navy's ranking ace. He had eighteen miniature Rising Suns stenciled on his fuselage. The paint on six of them was still tacky since he had earned them only the day before in the Turkey Shoot. He wasn't anxious to go on this one—not *that* far out. Mike Banazak, a turret gunner, didn't want to go either. He had lost his good-luck pocket piece, a little plastic Scotty, and he was still turning out his pockets when the big plane began to roll. Kent Cushman carried his wallet in his breast pocket, and along with his ID card he had an English sixpence, the little silver coin his bride had worn in her shoe when they were married. Clint Swanson made certain he had his good-luck ring, an ornament that had been carved for him by a favorite uncle. Clint always set his ring straight before a take-off or landing. His radioman, René LeBlanc, brushed his hand tenderly over the Sacred Heart of Jesus pin on his coverall lapel. A home-town girl had given it to him just before she became a nun. Grady Stanfill had one of his wife's lacy handkerchiefs stitched into the back of his helmet. Norman Sterrie, who had moved into Bob Isely's spot, held to his grim superstition and climbed into his cockpit from the starboard side. He had a dread of the port side entrance.

"Here we go again," said gunner Dick Bentley to his pilot Donald Kirkpatrick, leader of the second division.

"Here we go again," Kirkpatrick repeated as he always did to make sure they came back. Bentley was the youngest man on the mission. He had reached nineteen just one month before. Eugene Conklin was the youngest pilot, and had celebrated his twentieth birthday the December before. Harry Harrison led the section in Kirkpatrick's SBD division, and his regular Number 2, Pinky Adams, should have followed him off, but Adams' plane was spotted last on the deck, so Cookie Cleland, flying a much overage aircraft, took off in his place.

Sixteen years later, almost to the day, I sat with Commander Cookie Cleland on the bridge of U.S.S. *Forrestal* on the way back from a Sixth Fleet tour in the Mediterranean. Cookie was now Chief Intelligence Officer aboard, and he gave me much of the data and detail that follows:

At 4:21 P.M. Task Force 58 turned into the wind and within ten minutes eighty-five fighters, seventy-seven dive bombers, and fifty-four torpedo bombers on *Hornet*, *Yorktown*, *Bunker Hill*, *Wasp*, *Lexington*, and *Enterprise* were flagged away. All the Hellcats and Helldivers carried extra fuel in belly tanks. By 6:40 enemy snoopers sighted these American formations.

Possibly for the first time Admiral Mitscher did not watch the take-off; he was too busy with his staff in flag plot for he now had to decide whether he would launch a second strike. After some long soul-searching consideration, he stared down at a chart and said, "No! Hold that second strike."

The first enemy ships spotted were six of Ozawa's tankers, escorted by six destroyers that were left well astern when the First Mobile Force went to twenty-four knots. The seven carriers were well out in front of the main group, and the battleships and heavy cruisers were disposed so they could deliver a heavy curtain of antiaircraft fire. Few fighter aircraft got off to intercept, and at most only seventy-five planes were launched during the following action.

While the American dive bombers and torpedo bombers moved into position, the Japanese surface ships went into a series of tight circles and S turns, all the while festooning the sky with varicolored anti-aircraft fire. Two oilers were quickly put out of commission. Two carriers of Admiral T. JOSHIMA's division were attacked savagely, but probably escaped.

During this action Lieutenant (jg) George B. Brown, who had sworn to get a carrier or go down himself, led a five-ship pack of Avengers that were armed with torpedoes. He selected the carrier *Hiyo*, slipped into a cloud from which to start his approach, and then coming out with the sun behind him nosed down into a 50-degree dive and headed for his target.

The antiaircraft fire was wicked, part of his port wing was shot away, and fire burst out, enveloping the center portion of the fuselage in flames. The radioman had to bail out, and advised the gunner to go with him. Lieutenant Brown then continued on alone, and on the way in the fire burned itself out. He completed his attack run and registered a direct hit. His wing man, Lieutenant (jg) Benjamin C. Tate, held to his course, but missed. A third torpedo from the plane of Lieutenant (jg) Warren R. Omark scored, triggering a loud explosion.

Tate re-formed on Brown near a cloud and saw that his leader's

plane was badly damaged, and it seemed that Brown was hurt since he was flying erratically. Tate could not help him, of course, and Brown's plane finally disappeared.

After floating about amid all this naval strife, the gunner and radioman from Brown's plane were picked up the next day when the U. S. carriers moved into the action area. Like the famous Ensign Gay, they saw the final torment of a Japanese carrier. Two enemy battleships attempted to give aid to *Hiyo*, but she burned herself out, and went to the bottom.

Some of the other Avengers were not so lucky. They carried only bombs, not torpedoes, and could not make clean bomb runs because of the intense antiaircraft fire. The attack did not allow much more than this, for bombs were of little use in such an action. Small fires were started, but their damage was inconsiderable. The carrier *Chiyoda* was hit and set afire. This seriously damaged her flight deck, but she did not sink. The battleship *Haruna* was hit in such a manner that water flooded her magazines.

Five Avengers off *Enterprise*, carrying only bombs, were led by Lieutenant Van V. Eason and made an in-line approach. They received a savage beating from ack-ack guns so that the line wriggled and twisted like a blacksnake. Fighter planes went ahead trying to beat down the gunners aboard *Nagato* and *Mogami*, and with this assist Eason took his Avengers down. When they pulled out, Eason was positive that they had scored at least eight hits and caused one heavy explosion aboard the carrier *Ryuhō*. However, postwar records disclose that the Japanese carrier's damage was superficial, and did not necessitate noteworthy repairs.

As Lieutenant Eason's Avengers came out of their dives, four Zekes slammed in, but broke off when two Hellcats joined in the fray that turned into a miniature dogfight with the battleships sending up five-inch shells to add to the din.

Commander J. D. Arnold, who was leading an Avenger group, was concerned about the failure of Navy flying men to pick out the big carriers. He ignored the escorts and went after the *Zuikaku* which had no Zekes to defend her, but she had what was more important—a lot of luck. All but four of Commander Arnold's Avenger pack had been armed with 500-pound bombs, instead of torpedoes, and the enemy carrier seemed to have no difficulty in evading the two "tin fish" that were sent at her.

Dive bombers from *Enterprise* joined in this attack, and consider-



able damage was inflicted with several actual bomb hits and five near misses. One explosion caused a serious fire on the hangar deck and *Zuikaku* was unmanageable for a short time, but all fires were finally doused, and the big carrier returned to Kure under her own steam. She was patched up in time to join in the October 25 battle off Cape Engaño on northeast Luzon where she was sunk.

Avengers from *Monterey*, *Bunker Hill*, and *Cabot* ignored the oiler force and roared on to tackle the main fleet. Again, the 500-pound bombs, although delivered with rare courage, only started a small fire aboard *Chiyoda* and damaged her flight deck. *Haruna* took a direct hit, but suffered little damage, and the cruiser *Maya* had a few fires to quench. No vital damage was scored against any of these vessels, but only twenty of the 216 American aircraft employed in the attack were lost. They had sunk one carrier and destroyed two-thirds of Admiral Ozawa's remaining aircraft, and had there been more confidence in the air torpedo the result might have been far more memorable.

As the U. S. Navy planes broke off, the enemy airmen made no attempt to pursue, but brave old Admiral Ozawa still cherished a small hope. He ordered his entire van, including the heavy cruisers *Myoko* and *Haguro*, plus a destroyer squadron to turn back and make one last try to intercept Mitscher's force. This effort was fruitless, however, since he had no idea where Task Force 58 steamed, and the search had to be abandoned after two hours. By then he had but thirty-five aircraft operational out of the 473 with which he had started his attack.

Now began the problem of getting the American planes back to their decks. In that latitude darkness fell at 7:45, and that night was very dark since the weather had moved south during the action. Considering everything, the battle-battered U. S. Navy aircraft were a long, long way from home. There were other considerations, too. During the air-strike attack Mitscher's fleet had closed somewhat with the enemy, but once the recovery operations went into effect, the U. S. carriers had to turn eastward again to pick up the headwinds. As a result, there were instances when the two fleets were almost three hundred miles apart. Knowing all this, and hoping to get back before nightfall or bad weather set in, many pilots flew at high speed and ran out of gas earlier than they might have. Others were just unlucky. Lieutenant (jg) Milton F. Browne of *Wasp* had to ditch halfway home because his tank had been punctured, but fortunately, he and

his gunner were rescued two days later by a Martin Mariner flying boat that had flown well beyond its reconnaissance-search area.

Admiral Mitscher wisely spread his three task groups wide to afford maneuvering room for the night recovery. He also suggested to Admiral Spruance that Admiral Lee's battle line be released to steam ahead in the hope of engaging Ozawa's fleet by the break of day. Admiral Spruance elected to play it conservatively and held to the theory that his Task Force 58 should be kept tactically concentrated during the night, making the best practical speed toward the enemy and thus keep them well within air-striking distance. He also believed that the battle line had no chance of overtaking the Japanese, and he wished to keep his battleships within signal contact in order to dispose of any damaged ships the fliers might encounter the next day.

Tired, and no longer able to make accurate decisions, weary-eyed pilots began to seek a way back. Knowing these conditions, Admiral Mitscher ordered all radio silence suspended, and instead of dousing all lights decided to throw all caution to the winds and illuminate his fleet like a combined Coney Island and New Orleans Mardi Gras. Each ship turned on a searchlight and aimed its beam straight up into the sky. Truck lights blazed, star shells and parachute flares hissed and glared, and glow lights were flicked on to outline the decks. All this, against a tar-black night, threatening weather, and intermittent flashes of lightning, added the touch of a nineteenth-century theatrical melodrama to the whole extravaganza.

All fine and well with the carriers and their screens, but the aircraft were three hundred miles away from this welcome. Under normal conditions some of the TBMs and SBDs could make the long haul home, but most of them had been in combat, on and off, for ten months, and they were battle-worn, their engines old and fuel-hungry—some of them should have been on the "unserviceable" heap weeks before.

Now all aircraft, dive bombers, torpedo bombers, and fighters, were bucking a fourteen-knot headwind, and every pilot knew that when he did reach the task force there would be an indeterminate period of circling—still under full power—to overcome the drag of lowered flaps and landing gear before they could go into the glide-in path. The multiseat bombers faced the toughest problems, and their lead pilots took them down to one thousand feet where the atmosphere was "richer," and throttled back to "automatic-lean" for the greatest economy of gasoline, but with every mile the pilots could only hope

and figure: "We got three hundred miles to go. We're maybe making 120 miles ground speed, meaning we'll take at least two and one-half hours. If we're lucky we can find our particular carrier in half an hour, more likely forty-five minutes. Next we buck into the pattern—like everybody else—and take our turn going aboard. Brother, it's gonna be close!"

After thirty minutes plaintive, panicky, or defiant voices were carried into the ether. Some pilots could not find their groups or their squadron leaders. Others realized that their fuel was dwindling as if the tanks had holes three inches in diameter bored in them.

"Hey, listen Pete! I only got ten minutes of gas left. I'll be on vapor in a minute or two. What'll I do?"

"This is Fifteen Bazooka. Where am I? Will someone tell me where I am? I'm really lost."

"I'm not staying up here, gurgling along like this. I'm putting my hulk down while I got power. So long, Pete. Try to pick me up in the morning, eh?"

The flight leaders wished they could help, but there were so many kids all asking the same questions. There was nothing to do but turn the volume down and not listen. But even so the wails continued to bleat through.

"I can't make it, you guys. I'm going in. Have them look for me."

"I'm not picking up the beacon. Will somebody please tell me where is home? I'm really lost. Come on, fellers!"

It was true. Some of the pilots were helpless. By now their instruments had failed, or had been shot away. Some of the pleas came from kid pilots who had not been through anything like this. Night flying inland behind Pensacola or Corpus Christi was simple. You had towns, bright lights, and the gleam of railroads to work on. You at least had a faint horizon to give you a lead.

Then there were the exuberant types who had been so enthusiastic about tackling the Japanese Fleet they had ignored all warnings concerning fuel conservation, and when they came out of the uproar, had no idea where they were going, or where the fleet would have been.

One squadron commander listened as five pilots talked over their situation as matter-of-factly as a group planning a set of team plays prior to a basketball game. First, they decided whether to keep going until they had gulped the last ounce of fuel, or whether they should all ditch together. They took a vote on it and it came out four-to-one for ditching. It was as simple as that. "Okay, here we go!"

Another pilot who was listening complained: "You guys must be nuts. I got sixty . . . sixty-five gallons!"

"So what? Where do you expect to go with sixty-five gallons?"

"You got sixty-five . . . that's the law of compensation. I got five. I'm going down."

"I'll be with you, pal. I got seventeen, but you know me . . . come easy, go easy."

"That's very kind of you. A real pal. I'm very much obliged. You ready?"

There were two wide splashes on the sea below. Then three more . . . and the rest of the planes of TF 58 flew on in the sable night. When the fleet was still more than ninety minutes away, someone yelled, "I can see lights. They got lights up for us, boys."

"Take it easy. That's just lightning."

Someone else chipped in, "Lightning, my eye. They're trigger happy. They're shooting at the boys already back. That's what they'll do to us. We get it nine ways to the dozen."

"Yeh! Don't shoot! We're real friendly."

Then silence reigned over the next fifteen minutes. No one talked. No one rehearsed the attack. No one requested confirmation on a torpedo hit or a bomb that had started a fire—on something. By now no one had anything to say. They were talked out, exhausted, or afraid to show their growing concern or fear. Only the gunners and radiomen clacked on, asking the same questions over and over.

"You think we got enough gas to get in?"

"Sure, but it'll be ticklish."

"You think we'll make it?"

"We always do. I think we're in the money."

"I sure wish I knew how much gas we really have."

"Then you'd be completely nuts."

"You think we're doing pretty good?"

"I think we should be in good shape. Who knows?"

"That means none of us is going to get home, eh?"

"Why don't you shut up?"

"We ain't lost, are we?"

"We ain't lost. It's just that we got so many planes left, there won't be room to get into the landing circle when we do get back. That's what worries me. Can you imagine what it'll be like when we all get back there?"

"Our Father who art in heaven. . . ."

One hundred twenty-five miles to go.

Now physical fatigue and the strain of taut nerves cut in to bring on a debility none had ever experienced before. Few of them had heard of vertigo, but this was a perfect beginning. It was inky black with no visible horizon—not even in the west. They had nothing to work on. No moon, no stars, and the overhead gleam that might have been of some help was intermittently erased by the low clouds. If they flew on the navigation lights or the exhaust glare of planes ahead, they held a temporary course, but at times the lights they formed on, gradually slipped back as the uneven speeds created a shuttle condition. Some planes had no navigation lights, some kept flicking on and off, and there was no truth in any of it. A tail light that had been a godsend for fifteen minutes would disappear suddenly, and a pilot would find himself flying in an unlighted dome of unknown proportions. If he searched for comfort in his instruments, he discovered that someone had switched them around and nothing was where it was supposed to be. Compass cards danced and refused to give a reading. The artificial horizon played tricks until the poor devil believed he must be flying upside down. Oh for a star, a gleam of light, a pencil line of dawn, just one plane that didn't switch its instruments around when a guy wasn't looking.

If a star was selected to home on for a few minutes, it turned out to be the tail light of another guy who was also hopelessly lost. Vertigo was building up with the blinking and straining. Pilots would conclude that the needles or index cards on the instruments must all be stuck. They punched with gloved fists or tried to kick at the tangle of wires and conduits at the back of the panel.

Oh, this was a lovely night.

The radiomen, hunched up in comparative tunnels, could see nothing and vertigo embraced them quickly. There was no escape visually. They went slack with the hypnosis of vibration, and the details of the bulkhead and instrument panel blurred. Nerves were doubly tight, and the once faint sounds of mechanisms, pulsations, and automatic actions of the pumps and boosts had now increased to roars, clashes, and the insane dissonance of a foundry.

Hypnosis also stroked at the pilots as they sat alone in the darkness. The props sang a taunting melody, the engines beat out a droning rhythm, and combined into a lullaby that sucked all resistance from the nerves and will power.

Then the radios clicked on again. Some had one tank left, but

drowsy pilots refused to believe the needle was that low until the engine coughed and then there was a wild flurry to switch over and wait for the pumps to punch a new stream of fuel into the carburetors.

"I got fifty gallons left. Where the hell is that fleet? Back at Pearl?"

"Hey! Hey! Hey!" someone cried from out of the blackness beyond.

"I got a homing signal. You hear that—a homing signal. I figure we got only seventy-five miles to go. Any of you guys getting it?"

"Shut up! Get out there in front, and take us in."

"Remind me to buy you a flashlight when we get in. Get out there and take over, sonny!"

"Christ! We were only a few points off. We were doing swell, eh? *Bunker Hill*, here we come!"

What planes were still in the air caught a vertical searchlight beam at 8:30. It came up from *Bunker Hill's* group.

"Boy, oh boy, what a relief. We're gonner get in."

"You speak for yourself, chum. I got maybe thirty gallons left."

So far, so good, but the flat-tops of Task Force 58 were spread out over hundreds of square miles of ocean, and this was not a daylight recovery. Few of the pilots had ever attempted a night carrier-landing, and in their present weary-eyed, exhausted condition could no longer make accurate decisions. Many were shocked by the giddy display of illumination Admiral Mitscher had ordered for their benefit. One or two said later that they thought the war was over. Looking back one wonders whether this reaction may have reduced the normal in-flight discipline. There was no organization of any kind. The landing pattern went completely awry. The traffic circuits became hot-rod racing orbits and the perpendicular searchlights became the pylons.

Too many pilots claimed they were out of fuel when they actually had sufficient for normal landing operations. Too many decided that they could not make the deck, and flopped into the water beside any vessel that would pick them up. One pilot landed with his gun switches on, and the sea around the carnival area was aglow with the riding lights of aircraft sinking beneath the waves. Here and there a few tracers that were carelessly fired, screeched through the wild gleam and triggered pandemonium. Exhaust flame, blipping on and off, resembled wild fireflies darting through a surrealist jungle.

The whole exhibit provided a frightening kaleidoscope of blinding lights, intricate flame trails, and inky backdrops of Stygian darkness. *Bunker Hill's* air officer, Commander "Wingover" Smith, was killed during this madhouse display.

Aboard *Lexington* the first of the returning planes appeared about 8:15, and her landing-signal officers, John Shuff and Eugene Hanson, both experienced pilots, went aft to bring them in. Both knew that each type of plane had to be handled in a different manner, depending on its weight and flight characteristics. In fact, different models of the same plane require different handling.

Among the first to get into *Lexington's* landing circle were some SB2Cs, a type not included in this carrier's air group. Still, they had to be brought in and Hanson said, "You know more about these babies than I. You take over."

Shuff knew that SB2Cs were "floaters" and that earlier models had to come in five knots faster, but how he was going to distinguish in the night, he had no idea. *Lexington* began to steady after making her turn into the wind, and Shuff picked up the first plane with his illuminated wand, thinking that he was bringing in a SB2C. When it dabbed in and caught the wire, it turned out to be a TBF.

Admiral Mitscher bellowed down from the bridge: "Whose plane is that?"

"She's off *Hornet*, sir."

"*Hornet*? She's not even in our task group. Holy Smoke, if the boys are having that much trouble finding their decks, we might as well tell them to land wherever they can. We can unscramble them in the morning," the admiral said.

That did it!

A Helldiver from *Hornet* crash-landed on *Bunker Hill*, although the pilot had been given a frantic wave-off, and a display of Very signals indicating a fouled deck. The plane stood on its nose and hacked its propeller through the flight deck just in time to cause an Avenger from *Cabot* to break off a wing against a gun mount, although this pilot had also been warned off.

Lieutenant V. V. Eason's tank went dry as he approached the lip of *Lexington*. He pulled his wheels up, turned to port, and slithered along the top of the waves like a skimmed stone, but he was quickly picked up by a destroyer.

Shuff tried his luck on a second plane, an F6F that had been straying about when Admiral Mitscher's order came through. Instead of a single fighter Shuff saw half a dozen aircraft, all headed for the same flight deck. It was impossible to handle them one at a time. The only thing left to do was to wave off the lot, for if two were to attempt to glide in together, they undoubtedly would crash and foul up the deck

for more than an hour. Finally an F6F was brought in, and then another TBF that lost its engine a few feet ahead of the ramp. Shuff saw the port wing drop and the plane swing around sharply, threatening to cut him down as a saber cuts down a musketeer. He dove into the safety net and came up in time to see the TBF splash into the sea. Three airmen crawled out and waved as they drifted astern.

Almost half of the returning aircraft landed on the wrong carriers, and in some cases planes and pilots from seven to eight carriers were on one flight deck. Two men were killed and four seriously injured when an incoming plane slammed into another being moved from the flight deck to an elevator. One young ensign pilot mistook the red truck lights on a destroyer for his own carrier, *Monterey*, and thought the dancing lights were the wands of the landing officer. He remedied this mistake just in time and plopped down in the water alongside the destroyer where he was boat-hooked out before he was hardly wet. Another pilot from a light carrier decided that such a small deck was no place for him under these night-recovery conditions, so he searched about, looking for the longest deck in the fleet. He landed safely—and discovered that he had plopped down on his own light carrier.

The off-duty men went topside to see the recovery. They clustered around the island, along the catwalks, and on the searchlight platforms, and some of them clambered up on the 40-mm. gun mounts.

The first half hour was fun and there were some small bets made as to who would make it, right side up. It was hilarious for a time and some rare comments rang out, but the truth finally seeped through and the fun and comment died down. There was a period of strained silence, and when another TBF stumbled in, lost a wheel and splashed over the side, one young seaman crunched up his hat and started below.

"There's nothing in my enlistment papers that says I have to look at this," he muttered.

"For that, they get flight pay?" another asked.

One by one, they climbed down, suddenly weary, and mumbling something about hitting the sack.

Out on the flight deck John Shuff brought in a fourth F6F, and then screamed at a group of men behind him. The fighter dropped a wing, shoved a wheel leg up into the well—and they all had to dive into the safety net again. The F6F pancaked into the water, but Shuff was back on his feet in time to safely guide in an SB2C.

So far he hadn't seen one plane of his own air group.



Another aircraft appeared in the false glow aft. It had no lights and was really hitting the knots, and was aiming at the ramp like a projectile. Shuff knew that if it ever hit it would take out two or three arrester gear cables, and that would be that. No more planes would get in that night. He waved frantically, but the oncoming bolt did not swerve an inch.

"Get out of here!" Shuff screamed.

Midway up the flight deck tragedy was being set out, as a child sets out a toy theater. Lieutenant (jg) Verne Prather, top man of the flight deck crews, sensed what was coming. He turned and crouched like a boxer, knowing he had to move fast. He could see Shuff still waving the wands, and knew this was it. Behind Prather, toward the bow, a plane-handling crew was securing the SB2C that had just come in. Bill Long, an aviation machinist's mate, stood front, flicking his fingers, as he guided the SB2C forward over the last few feet to its parking space. Two crewmen crept along close to the wheels, ready to shove the chocks in when Long was satisfied that she was in close enough. Eight other men were pushing on the wings, working to fold them.

The incoming plane shot past Shuff, and someone began twirling the handle of the crash siren.

"Clear the deck!" Prather screeched, and threw himself flat under the broadsword blade that was the plane's wing.

Bill Long did his best and bellowed: "Six, get clear. Crew Six, get clear!"

One or two men rolled into the depressed catwalks, a couple had little choice but to flop where they were and coil their arms around their heads. Bill Long and the boys with the wheel chocks stood their ground—they had no choice.

The incoming plane hit with a horrendous crash. There was a blinding flash, and suddenly every light on the deck went out. What might have been human screams knifed out of the wreckage, and then it all worked out to mean: "Loose bomb!" Men nearby moved in like phantoms, and only the hissing of fire extinguishers could be heard . . . no other sound.

Prather and Dr. Neal Baxter, group flight surgeon, snatched at two fear-stiff corpsmen and a youngster who hugged a stretcher. A sickly green spotlight on the bridge flickered, steadied and held until it brought out the details. Prather and Baxter started a prayer, and then jumped into the forge-hot tangle.

The six planes that Shuff had brought in successfully had been parked at the bow. They were mostly fighters, but there was a TBF and an SB2C in the tangle somewhere. The pilot and gunner were still in their seats of one SB2C, as they waited for their wheels to be chocked up. The berserk plane plowed into them and its propeller cut the gunner into bloody slices. The tail assembly was shoved up until it pinned in the pilot. This two-plane mess then slammed forward into the three aircraft ahead, and—then there were none. One of the boys hauling a chock was battered to death. Bill Long was out cold, having been cut down with a hunk of flying wing. The pinioned pilot would limp for months, but the pilot and gunner of the SB2C that had staged this carnage were uninjured.

What was left of the deck crew took every precaution to prevent a fire. Prather climbed up on the wing of the SB2C to make certain that all switches were off, for oil and gasoline from ruptured tanks had spewed out and was splashing across the deck, and torrenting down into the portside catwalk and gun mounts. All it needed was just one spark.

Dr. Baxter hauled out the injured men and started pumping his morphine gun. Long was yammering again, "Six, get clear! Crew Six, get clear!" His feet were kicking in a pool of dead men's blood, that in the acid gleam looked like liquid tar.

An ensign in one of the gun mounts was fingering oil from his eyes, when a crewman who was wearing a set of earphones, hauled him around. He stood screeching incoherently, and finally managed to gulp and point at a 250-pound bomb, properly fused and ready to blow, that had rolled across the deck and came to a halt a few feet away. No one remembers what became of it.

Cookie Cleland who had been flying Old 39, a rust bucket of an SBD, picked up Irish Caffery and Jack Wright, and tried to guide them in. It wasn't simple, for slipstreams from stray aircraft tipped his wings and gave him a bad time. He'd get Old 39 straightened out, and another storm of slipstream would tilt him over again until he was finally all alone.

"Boy, was I a dooley. I felt like I was mummified with a brain to match. Boy, I should have a tape recording of all the dumb things I thought and said. I tried to get aboard *Princeton* twice. I made two dumb passes at *Lexington*. I think I made two to get aboard *Enterprise*, but I really can't remember. Anyway, I seem to have made *Enter-*

*prise*—finally—but I didn't really come to until I was taxiing up the deck when my engine conked cold. I wanted to jump out and pat Old 39's cowlings, but there wasn't a jump left in me. But she did it on her last sniff of gas."

When the crew started to haul Old 39 up the deck they gasped as they stared at a great hole under the gunner's cockpit. There was a long rip in the starboard flap, and a 20-mm. hole under the starboard tank. It was such a hulk that no one considered keeping it, and they began to yell, "Come on, Cookie, pile out. Get your gunner out, too. We gotta heave this hunker-junk overboard."

It was then that Cookie Cleland moved. He was out of his cockpit and on the wing root of his plane in nothing flat. "What did you say?" he demanded.

"I can't help it, Cookie," the plane captain tried to explain. "This crate is worthless. There's no room for her. Come on, get clear."

Cookie reached for his gun. "This plane stays aboard, mister. You heard me."

The plane captain waved a hand, and walked away, as he agreed. "O.K. sir. If that is the way you want it, she stays aboard."

"You're damn' right she does," said Cookie.

But there were more planes curling around, trying to get in. Prather darted from hulk to hulk, figuring how long it would take to get the crane up, and heave the junk overboard. Officers up on the island were begging for space and order.

"Give me ten minutes," Prather pleaded. "Just ten minutes . . . maybe five!"

When the runaway SB2C first hit, someone pulled a master switch up on the bridge and blacked out the carrier, mainly to warn other aircraft that the deck was "foul." The planes overhead were stampeding in maverick panic. On each side of the carrier aircraft were hissing past, only to pancake into the waves ahead. Another dropped nearby and sank. No one climbed out of that mess. The minutes were clicking past.

The lights aboard *Lexington* had been doused at 9:10. Exactly at 9:20 they went on again and John Shuff saw a lone TBF sliding down the groove. By the time he had him lined up and steadied, six more came out of nowhere, edging in for space, and the mad stampede was on again.

By 10:50 when a check-off concluded that every plane had landed,

splashed over the side, or been shot down, the carriers moved back into cruising formation. Some idea of the carnage was then realized. The sea around reminded one sailor of a summer meadow with hundreds of fireflies carrying out their mating ceremonies. This impression was created by the dozens of pilots or crewmen who were swimming about or were huddled in rubber rafts, as they switched on and off their emergency flashlights. Others added to the pastoral scene by blowing boatswain's whistles, that came in clear and distinct with the evening's calm.

Destroyers, flashing their eighteen-inch searchlights, soon spotted the rafts and swimmers, and Admiral Mitscher ordered most antisubmarine screening held up until all possible aid had been given the ditched airmen. All told, only sixteen pilots and thirty-three crewmen were lost as the result of the hectic night-recovery operation. Seventeen Hellcats, thirty-five Helldivers, and twenty-eight Avengers were destroyed by deck crashes, or ditching near the task force.

An amusing situation was created by Lieutenant Commander K. F. Musick, the torpedo squadron commander of *Bunker Hill*. Commander Musick had had to ditch on an earlier operational flight and had been rescued by the destroyer *Hickox*. This night he ditched again for the want of fuel, and was picked up by the same destroyer. To commemorate this "double" the destroyer's artist painted a caricature of Musick on the stack beside the insignia of planes shot down—adding a "hashmark" to record the second rescue.

Admiral Ozawa had as bad a time as Admiral Mitscher in getting his aircraft back. The Japanese carriers were not as well equipped for such night operations, and of the one hundred planes employed in attempting to hold off the American attackers, only thirty-five could be considered to be operational the next day. And with that, at Admiral Soemu Toyoda's order, the Japanese First Mobile Fleet put on all speed and retired.

Admiral Spruance had ordered a stern chase, but it was not exactly a relentless one. The high speeds used over the previous two days had made serious inroads on the destroyers' fuel supplies, and further high-speed chase was impractical. The only logical reason for continued pursuit was the hope of catching up with damaged vessels, or other ships that had been ordered to stand by. Our intelligence, however, was none too specific, so Admiral Spruance steamed west at an economical speed. Several long-range search flights were sent out from

*Wasp* and *Bunker Hill*, which also supplied air protection while ditched airmen were fished out of the sea, but they never got close enough to harass Ozawa's forces. Orders to break off and retire were given at 8:30 P.M. on June 21. The final searches were rewarded with the rescue of fifty-nine flying men who otherwise would have perished in the Philippine Sea. At the time Ozawa's Mobile Fleet was only three hundred miles from Okinawa.

This was the nature of an aircraft-carrier battle.

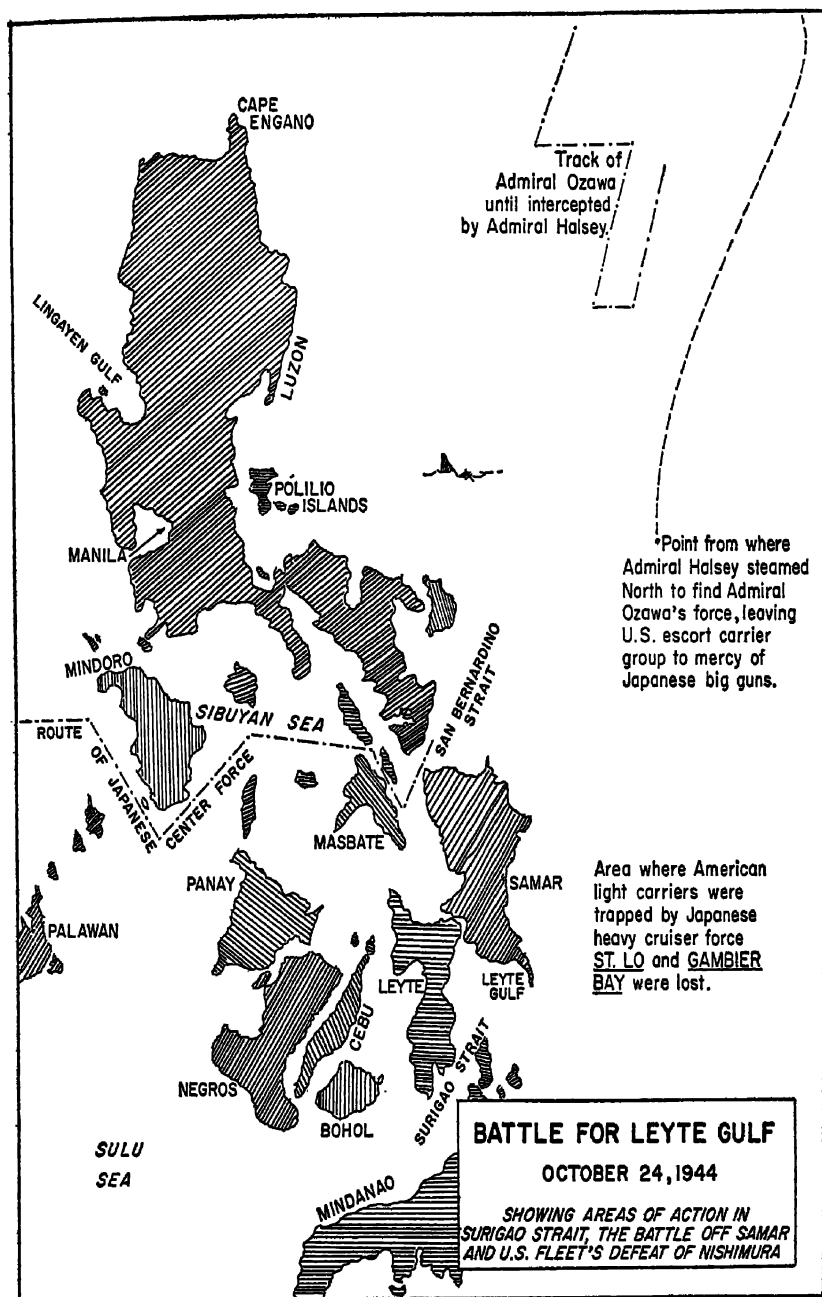
## CHAPTER X

### LUCK AT LEYTE

EVENTS in the Pacific moved at such a breathless pace, many people believed that the Japanese war was running out its skein. In less than four months an advance of more than one thousand miles had been made, and when it seemed that the Japanese Navy had received the coup de grâce, General Douglas MacArthur began to champ at the military bit. He recalled his promise to the people of the Philippines and made plans to take Leyte, one of the central islands, and then move north to Luzon. President Roosevelt and Admiral Nimitz agreed to these plans, but when other responsible minds were consulted, they brought up new problems; the group of planners wondered, once Leyte had been secured, whether it would be wiser to make for the island of Formosa, rather than strike at Luzon. Admiral King had conceived a plan for taking Formosa, together with a beachhead at Amoy on continental China. Such a move would have put American forces a long stride nearer the enemy's stronghold, than would the taking of Luzon.

However, the Formosa plan could not be carried out with the manpower and facilities that were available. Formosa was in Admiral Nimitz's area, which meant that he would have to furnish the troops and equipment for what would have been a major amphibious operation. At this time none were available, since operations on the European front were not going according to plan. General MacArthur argued that the Filipinos on Luzon would be of more use in the over-all cause than the hostile, or at best indifferent Formosans.

After considerable high-level haggling it was agreed finally that the Leyte operation would kick off on October 20, 1944, and once that goal had been made General MacArthur would invade Luzon two months later, December 20. Admiral Nimitz would provide cover and







support in this Philippine thrust. He also promised to give further assistance by invading one or more islands of the Bonin-Volcano group by January 20, 1945, and optimistically said he would take Okinawa in the Ryukyus by March 1 of that year.

The Battle of Leyte Gulf proved to be one of the greatest naval battles, but also was one of the most controversial engagements in the Pacific. It was fought in the maze of the Philippine Archipelago, churning up an area of almost five hundred thousand square miles, and drawing on every element of naval power from submarines to carrier planes. In distances covered, tonnages involved, and casualties suffered, it made the Battle of Jutland seem like a harbor skirmish. It was the naval battle that finished the Japanese fleet.

The battle for Leyte was initiated somewhat precipitously after our fast carriers, supported by the battleships of Admiral Halsey's fleet, had investigated and pounded Japanese bases from Mindanao to Luzon. U. S. Naval pilots flew over Manila Bay on September 21 and found the opposition most feeble, and our intelligence decided the time was ripe for an immediate invasion. A quick switch in strategy discarded the planned capture of Yap and the step-by-step moves to Mindanao in the southern Philippines. Instead an amphibious assault on Leyte in the central grouping was advanced by two months—to October 20.

Seven hundred U. S. vessels steamed for Leyte Gulf on October 19. Only one Japanese plane was in the air to give battle. This lone pilot could do nothing against 151 LSTs, 58 transports, 221 LCTs, 79 LCIs, and hundreds of auxiliary craft. By October 21, some 103,000 American troops had been landed with few casualties—only three warships received any damage—and General MacArthur had kept his word. He had returned.

The Japanese were in an unenviable position. Admiral Soemu Toyoda, commander-in-chief of the combined fleet, sent out word to "engage and conquer this enemy who enjoys the luxury of material resources." It was a ridiculous order, considering the fact that he was in no condition for another major engagement after the defeat in the Philippine Sea. Worse still, his fleet was divided and could not be concentrated immediately prior to battle. A few crippled carriers, some cruisers, and destroyers were still based in the Japanese Inland Sea. Admiral Kurita's First Division of battleships, cruisers, and destroyers was based in Lingga Anchorage near Singapore, convenient to its oil sources.

These factors, combined with the geography of the Philippines dictated the Japanese plan that had to be modified at the last minute when it was found that they had practically no carrier aviation available. However, the Singapore force was ordered to steam northward toward Leyte, with a stop at Borneo to refuel, where it would split and the central group under Admiral Kurita, with five battleships, ten heavy cruisers, two light cruisers, and fifteen destroyers, would head for San Bernardino Strait at night. The southern group, under Vice-Admiral Shoji Nishimura, with two battleships, one heavy cruiser, and four destroyers was to be joined at Surigao Strait by three more cruisers and four destroyers, under Vice-Admiral Kiyohide Shima. This flotilla was ordered to steam through Formosa Strait on a run from the home islands, and make one stop in the Pescadores.

This combined force planned to surprise and attack the American armada in Leyte Gulf during the dawn of October 26. Unfortunately, as we know now, the Japanese carrier fleet had been reduced to one heavy and three light carriers, and these four flat-tops could put only one hundred aircraft into the sky, but Admiral Toyoda devised a smart ruse. He decided that this small carrier force, under Admiral Ozawa, was to steam directly toward Luzon and act as a deliberate decoy, and in that manner induce Admiral Halsey to give chase and forsake his job of covering the amphibious invasion of Leyte. As it turned out the idea paid off, and if it did not afford Toyoda a major victory, it did furnish fuel for controversy.

Admiral Halsey, commanding eight large attack carriers, eight light carriers, six fast new battleships, fifteen cruisers, and fifty-eight destroyers, had been assigned to cover the support forces of the Southwest Pacific command in order to assist in the seizure and occupation of objectives in the Central Philippines. He was responsible to Admiral Nimitz, but "necessary measures for detailed co-operation of operations between the Third and Seventh Fleets was to be arranged by their commanders." This chart-room phraseology, mystifying to the layman, must have been somewhat bewildering to all nautical experts when this multiangled action began.

The Seventh Fleet, under Admiral Thomas C. Kinkaid, was made up chiefly of five old battleships that had been retrieved from the mud of Pearl Harbor, but it did have sixteen escort carriers, eight cruisers, and scores of destroyers, destroyer escorts, frigates, and motor torpedo boats. It was the Seventh's task to furnish shore bombardment and

close air support for the Army, and antisubmarine and air defense for the amphibious forces.

First blood was drawn by U.S.S. *Darter* when that submarine intercepted and torpedoed Admiral Kurita's heavy cruiser flagship, *Atago*. The cruiser *Takao* was also damaged by the same pigboat. *Dace* hit the cruiser *Maya* with four torpedoes, and the battle was on. *Atago* went down within twenty minutes, and Admiral Kurita moved over to the destroyer *Kisinani*, and later to the giant battleship *Yamato*. *Maya* blew up and sank in four minutes, but *Takao*, escorted by two destroyers, managed to slip back to Brunei in Borneo.

Search planes were sent out from the decks of the American Third Fleet, and before *Darter* and the other subs could radio details of their exploits and the position of Admiral Kurita's force, the largest task group of the fleet, TG 38.1, under Vice-Admiral John S. McCain, was ordered to retire to Ulithi, an atoll between Guam and Peleliu, for rest and supplies. The remaining three task forces were spread over three hundred miles of ocean to the east of the Philippines from central Luzon to southern Samar. One of these had been tracked for hours by enemy snoopers planes, but while American carrier aircraft moved out on similar reconnaissance missions, Admiral Kinkaid's ancient battlewagons were still off Leyte, banging away in support of General MacArthur's invasion troops.

About 7:45 on the morning of October 24, Lieutenant (jg) Max Adams, who was piloting a Helldiver, picked up a radar contact that turned out to be Kurita's attack force. With this warning the whole U. S. fleet was alerted and even McCain's task group was recalled. The Third Fleet turned its attention to San Bernardino Strait with intent to launch strikes against the enemy who was first seen at 8:20 A.M. This was Admiral Nishimura's southern arm steaming on a course for Surigao.

Aircraft off *Enterprise* bulled their way through a solid curtain of anti-aircraft. The battleship *Fuso*'s catapult was hit and all her available planes damaged beyond immediate repair. A serious fire broke out and took considerable effort to bring under control. A gun mount aboard the destroyer *Shigure* was blasted away, but Admiral Nishimura continued to order full speed ahead. At the same time Admiral Halsey was concentrating on the Japanese central force, known to be heading into San Bernardino Strait. Up till now there had been no morning search to the north or northeast, and Admiral Ozawa's decoy carriers, still steaming southward, were as yet undiscovered.

Admiral Toyoda's neck-or-nothing plan was moving toward a dramatic climax. Japanese land-based planes that flew out of Philippine bases furiously assaulted the Seventh and Third Fleets. *Langley*, *Princeton*, *Essex*, and *Lexington*, north of Luzon, took the brunt of this determined fire that required comparable resistance to extinguish. Seven Hellcats off *Essex*, led by Commander David S. McCampbell, intercepted sixty Japanese planes, half of which were Zeke fighters. After a melee of more than ninety minutes twenty-four of these enemy planes were destroyed with no losses on the American side. Airmen off *Princeton* claimed thirty-four more, while pilots off *Langley* and *Lexington*, not to be outdone, made similar claims, which indicated that the caliber of Japanese airmen was rapidly deteriorating.

But eventually the Japanese scored a "kill," and again proved that if you drop enough bombs, something will be hit. While a formation of *Princeton's* Hellcats was being recovered that morning, a lone Judy glide bomber that had been skulking in a muffin of cloud, decided this was the time for glory, and with rare skill and courage planted a 550-pound bomb on *Princeton's* flight deck. The missile bore in on the port side, drilled through three decks and exploded in the bakeshop, where every man working there was killed instantly.

The blast then mushroomed through the hangar deck, and started several serious gasoline fires. Fed by fuel spurting from the supply lines, these flames raced to where six TBFs stood with their bomb-bay doors open. The flames licked up into the fuselages and detonated the torpedoes that had been loaded for the next take-off; these missiles exploded one by one, and hurled the forward elevator mast high. The great platform seemed to float in mid-air, and then fell back into the pit, a tangled pile of wrenched steel. The after elevator also went up, but this platform was folded over and slapped down on the flight deck.

At 10:10 Salvage Control Phase 1 was ordered, which meant that all but 490 damage-control men were to abandon ship. Within ten minutes Phase 2 was set, which would have left 250 men aboard.

A beautiful morning sun had come out to look down on this tragedy, a light breeze was blowing, and some ground swell was noted. The carrier had almost come to a halt with her bow into the wind and most of her crew gathered well forward to take shelter from the explosion area. At 9:53 Admiral Sherman had ordered three destroyers to move in and stand by. The *Irwin* tried to get up to *Princeton's*

forecastle, but the carrier's gun sponsons prevented the destroyer from moving in closer than thirty feet.

A period of almost panic ensued; many sailors jumped overboard or went down the lifelines off the flight deck into the water. They then attempted to swim the narrow gap to *Irwin's* cargo nets that were lashed to the destroyer's hull. It was difficult going, even for strong swimmers, for the concentric wave action between the two vessels threw the men about like plastic toys in a child's bath. A few struggled across the gap only to be snatched away by the devilment of the waves. At times seven or eight sailors would be seen on top of a wave bulge, all snatching at the same section of net, where it was the survival of the fittest, as the stronger climbed over the weaker. A number of men drowned in this vortex, but many managed to clamber to safety. A few kept their heads and allowed the waves to carry them well aft where they were picked up by other boats—at least those who evaded the sharks.

The members of *Princeton's* black gang worked their way up from below and some managed to climb over to the destroyer's bow, a very difficult feat as both bows were rising and falling over a vertical gap of three to ten feet.

The cruiser *Birmingham*, commanded by Captain Thomas B. Inglis, next moved in to pick up men, afford antiaircraft protection, and to assist the stricken carrier. Hoses were passed and a volunteer party, under Lieutenant Allen Reed, climbed on board to lend assistance to the damage-control crew who were still fighting the several blazes.

The destroyer *Morrison*, darting in and out like a disturbed mother hen, snatched up more than four hundred survivors, and then steamed up to the lee side of *Princeton* to return a number of engineers to aid in damage control and fire-fighting. In that position she was smothered with smoke from the fires and many of the men were almost asphyxiated. Then her foremast and stack became wedged between two of *Princeton's* uptakes and were crushed and mangled when heavy debris, loose vehicles, and broken equipment tumbled down in a noisy avalanche. It required considerable hauling and tugging by the destroyer *Irwin* to free *Morrison* from the torrent of broken jeeps, tractors, and mobile derricks.

In the midst of this confusion another air raid was signaled, and the destroyer *Reno* which had moved in close to pass fire hoses, had to scamper out and take up antiaircraft offense again. The *Birming-*

ham's crew which was almost exhausted by its effort to save the carrier, was warned that an enemy submarine might possibly be maneuvering nearby, so it had to unhook everything and move off.

The threatened air attack was broken up by a formation of Hellcats from *Lexington* long before they had come into the *Princeton's* area. Another large formation of Judy dive bombers came through but made only ineffectual passes against *Lexington*, *Essex*, and *Langley*.

When the air probe had been driven off and the submarine report proved to be false, *Birmingham* moved in again to fight the fire and provide a tow. All these well-meant plans were being carried out by 3:25 and the big cruiser was just nudging in when a tremendous explosion tore away *Princeton's* stern. The entire aft section of the flight deck went up like a great wall and fell back, a tangled heap of wreckage. The torpedoes and bombs in the aft section were sizzled by the heat and exploded, raining death and destruction on the *Birmingham*. It was one of the most horrible spectacles in naval history.

When the flight deck went up there were dozens of men preparing to pass hoses, fight fires, and man the anti-aircraft guns. In seconds the deck area, or what was left of it, was a chopping block of dead, dying, and wounded. Most of the men were badly torn by the blast, some bodies were hurled up to the communications platform, blood streamed down the scuppers and waterways, yet tradition and discipline rose to the occasion. Men with stumps for arms tried to help men with no legs, some attempted to crawl away to throw themselves overboard, one man muttered: "Don't waste morphine on me, just crack me on the head." Some with dreadful head wounds, thumbed the blood out of their eyes and attempted to aid others. More than two hundred sailors lay dead in the wreckage.

When first-aid workers made their way below decks, one of the chaplains was already turning a wardroom into an emergency hospital. In a short time the space was jammed with wounded or dying men. A few corpsmen struggled to bring order out of this bloody confusion, and as morphine gradually slowed down the pain, more advanced care was possible. Those who were able to stand, wrote out identification cards and lists required for burial of the dead. Others, tottering and weaving, held up plasma bottles.

The cruiser *Birmingham* was only slightly damaged, but her casualties were high. She had, however, set a good example in several new fire-fighting drills which were put to excellent use later on when *Bunker Hill* and *Franklin* were hit. *Birmingham* was ordered to bury

her dead and pull out. She steamed to the United States under her own power and was repaired in time to take part in the Okinawa engagement the following March.

*Princeton* had no such luck. Her hull was seaworthy, but there was no other available vessel equipped to tow her. Loss of water pressure prevented flooding the gasoline storage areas, and by 8 P.M. Captain W. H. Buracker ordered everyone over the side, and abandoned ship. Realizing that the situation was hopeless, Admiral Sherman ordered her to be sunk. The destroyer *Irwin*, which was burdened with some six hundred survivors, was given the job. Standing off a mile away, her first torpedo caught *Princeton's* bow, the second was a miss, the third porpoised, broached and ran wild, turning back to chase *Irwin*. By putting on flank speed and hard-left rudder, the captain managed to dodge this renegade, which passed less than thirty feet on a parallel course. The next torpedoes were wild misses, the sixth started off clean, and then turned suddenly and came hissing at *Irwin* exactly as the third had done. Once the destroyer had evaded that rogue, the task group commander decided that *Irwin* had had enough, and assigned *Reno* to finish the job. This destroyer had quadruple tubes, and she went in close for the kill. Her first two "tin fish" bored into *Princeton's* hull directly under the forward gasoline tank and more than 100,000 gallons of fuel went up in flames, ripping the carrier to blackened junk. She went down in a 2700-fathom deep, about eighty-five miles northeast of the Polillo Islands in the Luzon area. Although her casualties were less than half those of *Birmingham*, she had seven dead, 290 wounded, and 101 missing.

While October 24 was a sad day for *Princeton*, Admiral Kurita was also taking his bumps. It will be remembered that he had moved his flag to *Yamato*, and shortly after midnight his center force moved into Mindoro Strait. A search plane from Admiral Gerald F. Bogan's TG 38.2 picked it up early that morning, and this resulted in the air-surface battle of the Sibuyan Sea.

The *Intrepid* and *Cabot* launched a covey of fighters, dive bombers and torpedo planes, but this strike was hampered by heavy anti-aircraft fire and a second mixed formation was sent away. In the meantime Helldivers and Avengers from *Lexington* and *Essex* took off, and before the day was over more than 250 sorties were made against the center force. Kurita had little air cover and had to rely on anti-

aircraft fire from every available battery. As a result only eighteen American planes were shot down during these hours of attack.

The battleship *Musashi* was heavily damaged by planes from *Cabot* and *Intrepid*, and had to fall astern to be escorted by the cruiser *Tone*. Bombers and torpedo planes from every American carrier in the area pounded at the enemy battleship over the next few hours, and eventually she heeled over and went down at 7:35 P.M., taking 112 officers and 984 men with her.

*Yamato* and *Nagato* suffered two severe bomb hits, and *Haruna* was damaged by a storm of near misses, but none of the hits was severe enough to eliminate the Japanese vessels from further fighting.

The heavy cruiser *Myoko* received a torpedo in her stern that damaged two of her shafts, and she had to limp away and head for Brunei. This was too much, and Admiral Kurita decided to withdraw until Japanese land-based aircraft could make the situation less hazardous, but this decision upset the over-all plan since it was no longer possible for the center and southern forces to meet inside Leyte Gulf by dawn.

Although fortune seemed to be smiling on the American forces, Admiral Halsey felt that the picture lacked something vital; all this action going on everywhere, but no trace of any enemy carriers. The northern task force had been under attack by enemy carrier-type planes, but this fact proved little. They might have been flown from land bases. If there were any carriers in the enemy fleet, where were they? By 7:50 that night Admiral Halsey informed Admiral Kinkaid that he was pulling out to proceed north with his three groups to search for the Japanese carrier force.

This left San Bernardino Strait uncovered, an area where Admiral Shima's 2nd Striking Force and Admiral Nishimura's Force C planned to rendezvous. Admiral Kurita trusted that they would be there by eleven the next morning—or shortly after Admiral Halsey hoped to be engaging a fleet of Japanese carriers. We now know that Halsey went north, believing many of the exaggerated reports concerning the damage inflicted on Kurita's fleet. He presumed that the main force had been sunk, or at least driven home. At the same time Admiral Kinkaid, burdened with protecting the ships and personnel of the Leyte invasion, was, until the very last minute, under the impression that Halsey would stay around Leyte Gulf to handle the Japanese rendezvous there.

Admiral Shima, who was steaming down the western side of Luzon with his 2nd Striking Force, believed that he would have a picnic mop-



ping up what was left of the U. S. task force after Kurita had worked it over. Unfortunately, Kurita had not told of his plight, and instead Shima found himself hours behind Nishimura, and realized that he would have to take his slim force through the dangerous waters southwest of Panay and Negros Islands with little or no air cover.

From this point on everything began to go haywire. Rear Admiral Jesse B. Oldendorf set out a beautiful trap for Nishimura. First, he sent thirty PT boats to the southern entrance of Surigao Strait, and then deployed across the Leyte Gulf end of the strait everything he had available from submarines to the "ghost" ships that had been resurrected from the bottom of Pearl Harbor. It was inevitable that Admiral Nishimura would sail into the cauldron of disaster.

The little PT boats put on an ambush late in the evening of October 24, but Nishimura's gunfire drove them off. A destroyer flotilla, under Captain Jesse G. Coward, fired thirty torpedoes at the Japanese, and then escaped under its own smoke. At 3:10 the destroyers *McDermut* and *Monssen* launched twenty more torpedoes and sneaked away. The *Fuso* was hit and floundered helplessly, the destroyer *Michishio* was badly damaged, and all the rest of the way along Surigao Strait the American "small boys" hammered at the force and evaded the return fire, but Nishimura continued doggedly on. Four torpedoes drilled into the battleship *Yamashiro*; these were deep-running "fish" that broke *Yamashiro*'s back and she sank in fifteen minutes.

Admiral Nishimura still plunged on with the cruiser *Mogami* and two destroyers, ordering a continuation of his "attack," which took them under the guns of another U. S. destroyer squadron that donated more torpedoes and sneaked away without being hit in retaliation.

Their place was taken by three other destroyers, *A. W. Grant*, *R. P. Leary*, and *Newcomb*, and in attacking from ahead through broiling waters and the smoke that billowed in the narrows between Dinagat Island and Leyte the three "tin cans" found themselves surrounded by dozens of ships. The blips on their radar screens hopped about like trapped flies and no one knew where to direct the fire until it was noticed that heavy cannonading came from vessels shifting from a northerly to a westerly course. This had to be the enemy and the three destroyers turned westward to run a parallel course. Once in position, spreads of torpedoes were fired and the Japanese destroyer *Asagumo* hit.

Now the American "tin cans" had to retire from the heavy gunfire

of the enemy, and had the questionable choice of churning up the middle of the strait, or turning west and then proceeding along the Leyte shoreline. If they went up the middle they possibly would come under the heavy guns of their own battleships or cruisers, so they decided on the lesser of the two evils—or so they thought. After a short dash to the west, they turned northward and came under double salvos from Japanese and American big guns. The last in the column, A. W. *Grant* received a terrible blow.

The explosion created a serious situation and Commander T. A. Nisewaner ordered all torpedoes fired, to get rid of them, but before they could be cleared other shells struck the wallowing destroyer. Seven Japanese 4.7-inch shells and eleven American six-inch armor-piercing loads hit her. Fires broke out, explosions roared in all sections of the little sea greyhound, men were cut down and unmercifully butchered, but A. W. *Grant* remained afloat and was finally towed out of Surigao Strait.

By 3:01 A.M., October 25, Nishimura's battered force still steamed on, but within half an hour his flagship *Yamashiro* was hit. The destroyer *Yamagumo* had been sunk, and two other destroyers were running in circles with their rudder controls shot away. Nevertheless, Admiral Nishimura issued his last command: "You are to proceed and attack all enemy ships!"

The battleship *Fuso*, the cruiser *Mogami*, and the destroyer *Shigure*, in a pathetic effort to comply, churned on toward Leyte Gulf. At 4 A.M. the *Yamashiro* burst into flames, and spewed a wild confusion of pyrotechnics, and then another torpedo caught her magazine. She seemed to tear apart, and the battleship flying Nishimura's flag went down.

*Fuso* carried a similar ticket. She headed straight into the guns of America's "ghost fleet." These reprisal vessels, steaming back and forth across the mouth of the strait, belched concentrated broadsides. Both *Fuso* and *Mogami* stumbled into a hell-hail of shells and the battleship drifted helplessly and then suddenly burst into an inferno and finally went to the bottom. *Mogami* was also burning, but managed to turn away. She was finished off later with the other cripples. The destroyer *Shigure* miraculously evaded the torrent of steel, owing to her speed, and slipped off through the smoke and escaped. The captain was so relieved at being spared after all he had witnessed, that he forgot to warn Admiral Shima who had been following Nishimura in. All he reported was: "I am having rudder trouble."

Not being advised of anything more serious than steering problems, Shima plunged on into the strait, took one look, fired a handful of torpedoes, and turned around. He then sailed his flagship *Nachi* smack into the burning hulk of *Mogami* which had come suddenly out of the battle murk, but luck was with Admiral Shima. He backed off, got his bow all the way around, put on every pound of steam he had, and headed for the Mindanao Sea and naval obscurity.

At dawn that October 25 Admiral Ozawa's decoy force was eastward of Cape Engano. He was spotted by American planes at 7:12, and although he had but a handful of aircraft left, he gave it a final try. But it was a hopeless gesture for with little air opposition, Halsey's carrier planes could pick and choose their targets. The enemy carrier *Chiyoda* was soon hit. The *Chitose*, another flat-top, was hammered from above and below and sent up columns of smoke. She wallowed to a stop and began to list. The light cruiser *Tama* was neatly torpedoed and soon limped in erratic spurts of speed. The destroyer *Akitsuki* blew up from a salvo of air bombs, the light carrier *Zuiho* was hit, and Admiral Ozawa's flagship, *Zuikaku* took a torpedo aft, which eliminated her steering engine, and she had to be guided by hand.

A second strike by American carrier planes crippled *Chiyoda*, and she slobbered to a halt where she lay a practice target for U. S. surface vessels. Another strike early that afternoon finished *Zuikaku*, which had taken part in the Pearl Harbor attack. She rolled over slowly and went to the bottom. The carrier *Zuiho* followed her down at 3:57, but there were two more fat targets left—the *Hyuga* and *Ise*, dual-purpose battleships with sections of flight deck aft. These ships were bombed savagely, and their decks were ripped out. Torpedoes fanged into their safety bulges, near misses buckled great sections of hull, and the port catapult aboard *Ise* was blown away, but these vessels bore charmed lives and survived.

When Admiral Ozawa's flagship was going down, he transferred his flag to the cruiser *Oyodo*, gathered what cripples were left, and hurried out of the Cape Engaño area. He had had a bad time. Like all decoy groups, some sacrifice has to be made for any success enjoyed. Ozawa eventually lost four carriers, one of his cruisers, and two of his eight destroyers, but he had accomplished his mission.

Admiral Halsey had left San Bernardino Strait unguarded, and Admiral Kurita moved like a hawk among the chickens.

Samar, one of the islands of the Philippine group, is best known today for the famous Battle of Samar, in which the baby flat-tops, or escort carriers, won their spurs. Task Group 77.4, under Rear Admiral Thomas L. Sprague, was carrying out a routine midwatch offshore while Admiral Oldendorf was engaged in the Surigao Strait debacle. Sprague's force was divided into three task groups, known at the time as Taffies—Taffy 1, Taffy 2, and Taffy 3—for radio and communications convenience. Among them they had the light carriers *Sangamon*, *Suwannee*, *Santee*, *Petrof Bay*, *Natona Bay*, *Manila Bay*, *Fanshaw Bay*, *St. Lo*, *White Plains*, and *Kalinin Bay*. A special carrier division, under Rear Admiral W. D. Semple, was made up of the light carriers *Marcus Island*, *Kadashan Bay*, *Savo Island*, and *Ommaney Bay*. Rear Admiral R. A. Ofstie had command of *Kitkun Bay* and *Gambier Bay*. All of this carrier force was screened by more than twenty destroyers or destroyer escorts.

We now see clearly how Admiral Halsey had been lured out to take care of Admiral Ozawa's decoy force, and Task Group 77.4 was left to carry out routine air searches. No one on the American side had any idea that Admiral Kurita's "beaten force" would continue on and still look for a fight. Obviously, some of the earlier success had been exaggerated, a point used later by Admiral Halsey when he was under heavy criticism. But within seven hours after breaking off against Admiral Bogan's Task Group 38.2, and presumably out of the fight, Kurita had collected his cripples and steamed on for nearly 135 miles, completely undetected.

Early that morning he was well within American radar surveillance long before he was spotted by visual lookouts. On the other hand, Kurita made little profit from his surprise, for when he first came upon the U. S. Navy ships he was not able to identify them, and for a time believed that he had joined Admiral Ozawa's carrier force.

On the American side disbelief, amazement, and consternation reigned, for the silhouettes were recognized immediately. These enemy ships were supposed to be west of the Philippines, and Admiral Halsey with his fast battleships and attack carriers was somewhere north off Cape Engaño. All that stood between Admiral Kurita and the U. S. transports, supply ships, the amphibious craft in Leyte Gulf, the Army headquarters and their supply dumps on the beach were the CVE baby flat-tops. Some old-timers said: "CVE—combustible, vulnerable, and expendable!" They were built on merchant hulls, carried very little armor, mounted only five-inch guns to protect themselves, and could

accommodate less than thirty planes. In this particular action they were intended only for air support of ground operations ashore, anti-submarine operations, and minor air-defense missions.

Within five minutes the *Yamato* was lobbing over eighteen-inch shells while Admiral Sprague endeavored to get every available plane off the jeep-carrier decks. *White Plains* was damaged by near misses, and her starboard engine room went out, electric circuits were broken, and one fighter plane was lifted off its chocks and hurled across the flight deck. The enemy then switched to *St. Lo* and more near misses and fragments caused severe damage.

The tin-can carriers tried to make smoke for each other, and for a few minutes this trick worked. Most of the aircraft were launched safely. They carried small-sized anti-personnel bombs or depth charges that were designed for their normal missions. There was no time to rearm with bombs that would even damage battleships. Admiral Kinkaid aboard *Wasatch* in Leyte Gulf realized the worst had happened when he received the news. He did what he could and asked for battleship support from wherever it could be sent. In Hawaii, Admiral Nimitz, who was warned of the probable disaster, radioed Admiral Halsey: ALL THE WORLD WANTS TO KNOW WHERE IS TASK FORCE 34? The first six words of the message were obviously padding to help in code security, but unfortunately it was later presumed to be criticism of Admiral Halsey.

Kinkaid's appeal fulminated action in Leyte Gulf and along the Surigao Strait, but the battleships were a long way off, their crews were worn and weary, and the ships needed ammunition and fuel. In the meantime, off Samar, Admiral Sprague was fighting for his life.

The jeep-carriers steamed to the east under Admiral Kinkaid's orders. The enemy had them within 25,000 yards range, an easy distance for their heavy guns, and the American five-inchers were completely outdistanced. But heroics were the order of the day. The destroyer *Johnston* moved in at thirty knots to launch a spread of torpedoes, and escaped being damaged until she was making the run back when a salvo of fourteen-inchers and six-inch shells beat her to fragments. She limped away at less than sixteen knots, and a heavy weather squall came up which proved a temporary sanctuary.

At 8 A.M. Admiral Kurita sent some of his faster ships seaward to head off and flank the CVEs. Admiral Sprague had little choice. He ordered another destroyer attack, and *Heermann*, *Hoel*, and the battered *Johnston* answered the call. *Johnston* had no torpedoes left, but

her skipper, Commander Ernest E. Evans, argued that they had some five-inch ammunition to fire, so these three little vessels went out on a daylight attack against the heaviest available ships of the Japanese fleet.

But the speedy destroyers made the most of every bit of weather squall; they covered each other with black smoke, or ejected chemical smoke from their fantails. As they raced in, coursing like greyhounds, they could hear the thunder of fourteen-inchers roaring overhead. They fired torpedo spreads at a heavy cruiser, slammed five-inch salvos at the superstructure of a battleship, and stayed there until there was nothing left to fire.

Commander Amos T. Hathaway, skipper of *Heermann*, calmly called Admiral Sprague on the TBS—telephone between ships—and reported: "Exercise completed, sir."

That report turned out to be a naval classic, for the destroyers were "completed" too. *Hoel* had lost her port engine and was being steered manually. Her decks were scarlet with blood, fire control and power were off, and what few men were left alive tried their best to save her, but scalding steam, power failures, and the continued raking fire by the enemy ended her fight. She was abandoned at 8:40 when she had a twenty-degree list, and went down fifteen minutes later.

The situation was equally grave aboard *Heermann*; dozens of men were killed or wounded, but Commander Hathaway skillfully fish-tailed his ship away under a storm of shells and escaped. The gallant *Johnston*, still bold and impudent, sneaked in to fire her pop-guns, but she was soon sighted and an avalanche of enemy metal, enough to capsize her by its sheer weight, sent her to bottom shortly after *Hoel* went down.

Undaunted by this, four slower escort destroyers, *Raymond*, *John C. Butler*, *Dennis*, and *Samuel B. Roberts* sailed in for their chunk of glory. *Dennis* soon had her guns knocked out, but *Samuel B. Roberts* came out of the smoke of battle and fired a few rounds, and then went down under the weight of enemy fire; only *Raymond* and *John C. Butler* crawled out of the inferno.

All this heroism and gallantry were not enough, for Admiral Kurita, sniffing victory, sent his cruisers seaward to intercept the lumbering flat-tops. Wounded and crippled, they were strung out miles apart, and all making a desperate effort to get to Leyte Gulf where succor might be possible. The *Fanshaw Bay* was hit by six bad blasts from eight-inch shells, and caught fire. *Kalinin Bay* was battered with fifteen

direct hits. *White Plains*, although raked from stem to stern, enjoyed a strange twist of fortune. Her thin-skinned hull was not solid enough to detonate the enemy armor-piercing projectiles and they bored clean through without detonating. *Gambier Bay*, which was lumbering along in an area unaffected by the smoke screens received a direct hit on her flight deck, and a near miss alongside, the force of which halted an engine. Her half speed soon dropped to a mere wallow where she was caught cold. She took a shell a minute over the next half hour, and finally went down when a Japanese cruiser, standing off at two thousand yards, riddled her mercilessly.

Although he had a great naval victory within his grasp, Admiral Kurita suddenly broke off at 9:25 A.M., and turned his ships to the north, and ended the surface phase of the Battle of Samar.

The rest of that day and over most of the next, American air and naval forces hammered at what remained of Admiral Toyoda's fleet. Enemy land-based planes tried to hold the line, and in sheer desperation the Japanese launched a number of kamikaze planes, one of which sank the carrier *St. Lo*, but American air attack later sank the famous *Tone* as she tried to sneak back through San Bernardino Strait. U. S. surface forces intercepted and sank the destroyer *Nowaki*, and the next day, October 26, the destroyer *Noshiro* was sunk. A cruiser, *Abukuma* and the destroyer *Hayashimo* were trapped and eliminated, while the monstrous *Yamato*, armed with eighteen-inch guns, was again hit twice, and had her superstructure blasted to wreckage.

What was left of Admiral Toyoda's fleet crept back to Brunei Bay. He had lost one large and three light aircraft carriers, three battleships including one of the two largest in the world, six heavy cruisers, four light cruisers, and eleven destroyers. Between 7500 and 10,000 Japanese seamen had died. Leyte Gulf was a blow from which the enemy did not recover.

The United States lost 2803 men, several hundred aircraft, one light carrier, two escort carriers, and the gallant destroyers that had fought so well to turn the tide of battle at a critical time.

Smoke was still billowing up from the Leyte Gulf conflict when the forces that were assigned to the Luzon landings, left Leyte. Concerned about the plans for the recapture of the Philippines, the Navy admirals gathered for a conference with General MacArthur on Hollandia. The Army chief belittled the possibility of Japanese air opposition over Leyte and the Central Visayans, despite the fact that both

Army and Navy aviation experts had warned him that it was unlikely that this opposition could be eliminated by December 5. For good or evil, nothing would move MacArthur's determination to keep his original date.

While this conference was in session Japanese kamikaze aircraft were battering Allied shipping in Leyte Gulf, and when the final details of the proposed attacks were considered closely, it was apparent that the original target dates would have to be postponed. MacArthur finally agreed to set back the Mindoro operation to December 15, and the Lingayen landings to January 9, 1945.

The Divine Wind activity of the suicide planes became more threatening with each day, and Vice-Admiral John S. McCain, who had relieved Admiral Mitscher as commander of Task Force 38, knew that he had inherited many problems. The kamikazes were so determined and deadly during the final strike of the Leyte campaign that all hands realized that the mop-up would not be a practice milk-run.

The carrier *Hancock* was set afire on her flight deck when a wing and part of a disintegrated suicide plane piled up and exploded. The light carrier *Cabot* was damaged by the explosion of a near miss. *Essex* was also hit, but had only superficial damage.

The kamikazes were not one hundred per cent lethal, but one in every four found a good target and racked up some damage, and one in every thirty-three sank a ship. In his report covering the periods of October 27-30, and November 9 to December 15, 1944, Admiral Halsey stated: "One fact is becoming increasingly evident. The Japanese air command, profiting by bitter experiences, has at last evolved a sound defensive plan against carrier attacks. He has co-ordinated and centralized his command responsibilities, but decentralized and dispersed his air forces, taking advantage of dispersal opportunities he had previously rejected."

Admiral McCain's first countermeasure was to reorganize Task Force 38 into three, instead of four, task groups, each consisting of a larger number of carriers, supported by a heavier screen. For example, these fast carrier groups were made up as follows:

TG 38.1	TG 38.2	TG 38.3
CV <i>Yorktown</i>	CV <i>Lexington</i>	CV <i>Essex</i>
CV <i>Wasp</i>	CV <i>Hancock</i>	CV <i>Ticonderoga</i>
CVL <i>Cowpens</i>	CV <i>Hornet</i>	CVL <i>Langley</i>
CVL <i>Monterey</i>	CVL <i>Independence</i>	CVL <i>San Jacinto</i>
	CVL <i>Cabot</i>	



Battleships: <i>Massachusetts</i> <i>Alabama</i>	Battleships: <i>New Jersey</i> <i>Iowa</i> <i>Wisconsin</i>	Battleships: <i>North Carolina</i> <i>Washington</i> <i>South Dakota</i>
Cruisers: <i>San Francisco</i> <i>Baltimore</i> <i>New Orleans</i>	Cruisers: <i>Pasadena</i> <i>Astoria</i> <i>Vincennes</i> <i>Miami</i> <i>San Juan</i>	Cruisers: <i>Mobile</i> <i>Biloxi</i> <i>Santa Fe</i> <i>Oakland</i>
Cruisers: (antiaircraft) <i>San Diego</i>		
Eighteen destroyers	Twenty destroyers	Eighteen destroyers

The *Franklin*, *Intrepid*, and *Belleau Wood* were undergoing major repairs, and the "Big E" and *Independence* were being refitted for nighttime operations, but a number of new *Essex*-class carriers were due to join the fleet shortly.

Admiral McCain, who was reputed to be an expert in the handling of aircraft carriers, was assisted ably by Rear Admiral Wilder D. Baker and Captain James Thach, members of his staff. These three put their heads together to formulate important tactical innovations to foil the kamikaze attacks. First, radar picket destroyers equipped with the latest in electronic gear and aircraft homing devices were to be stationed sixty miles out on each side of the target-bearing line. Their duty was to give advance warning of enemy aircraft approaching the carrier groups. Planes returning from previous strikes would then make a full turn over the picket ships to "de-louse" themselves of any kamikaze planes that might have joined the returning formation of U. S. Navy aircraft. This separation was to be effected by aerial specialists flying a combat-air patrol over the destroyers. This also helped in keeping the radar screens clear of friendly aircraft over the line of the most probable enemy approach. For instance, if any aircraft adopted any but the standard approach, they were identified quickly for what they were.

Another important consideration was a change in the complement of aircraft to be carried by the big flat-tops. Previously each *Essex*-class usually carried thirty-eight fighters, thirty-six dive bombers, and eighteen torpedo bombers. Under this new plan they would have seventy-three fighters, fifteen dive bombers, and fifteen torpedo bombers. The idea here was that McCain had had his Hellcat and Corsair fighters turned into all-purpose planes; now they could carry up to two thousand pounds of bombs and fly a bombing mission unes-

corted, they could intercept enemy strikes, or fly combat-air patrols. All this added materially to the carriers' effectiveness. With this revamped force, Task Force 38 was able to throw a blanket-cover of fighters over the Luzon airfields day and night, which kept the enemy aircraft pinned down and halted their attacks on the Mindoro convoys. During the short intervals when fighter formations were being relieved, the carrier bombers would sneak in and cut up the airstrips and grounded planes. In these operations 270 Japanese planes were destroyed, 208 of which were wiped out while in their dispersal bays.

Many other enemy planes were victims of two smart interceptions, the first taking place on December 14 when eight fighters from *Ticonderoga* that were making their last sweep of the day came upon twenty-seven Nakajima fighters and Zeros off the northeast coast of Luzon. In this scramble the U. S. Navy pilots claimed to have sent down twenty enemy planes, and not one American plane brought back a bullet hole. Again on December 16 during the first patrol of the day off the decks of the *Lexington* and *Hancock* eleven Japanese aircraft were spotted headed for the task force, but within a very short time every one was down in the sea.

From this it was apparent, as Admiral McCain stated later, that "the offensive air strength of the fast carriers had to be spread to cover the enemy in his large island systems and land-mass dispersions." At the same time the force found it necessary to concentrate its defense to a degree never considered necessary before. Previous to the innovation of suicide attacks, destruction of 80 or 90 per cent was considered an eminent success. Now 100 per cent destruction of the attackers was necessary to maintain the safety of the task force. These new offensive and defensive requirements, always in conflict, made immediate and sound compromise the continual task of the force commander.

The success of this new planning renewed Admiral Halsey's hope to make his long-desired raid into the South China Sea where what vessels were left, or had escaped from the Leyte Gulf battle, had sought shelter. But both Admirals King and Nimitz thought that our land-based aviation at Leyte was not as yet strong enough to risk moving the carriers from positions where they could cover Luzon, and so withheld their consent. It turned out to be an unfortunate decision, for before Task Force 38 could make any definite move it encountered the famous typhoon, the worst storm of the year in the Philippine Sea.

Possibly nothing equal to this disaster has ever been suffered by any

modern navy. Tremendous losses in all classes of vessels were endured. The U.S.S. *Spence* and U.S.S. *Monaghan*, noted destroyers, were lost. Other destroyers were severely damaged and were lucky to ride out this mad typhoon. Stacks were torn out, complete bridge structures were hacked off, and many foremasts were knocked down. High winds cut down radio and radar antennas so that much of the inter-communication was lost, making it impossible to maintain station. Damaged ships of the Third Fleet were scattered all over the ocean.

The carriers had to be deployed for safety, and by the afternoon of December 18, Task Force 38 and its attendant fueling groups were dispersed over an area estimated at fifty to sixty miles. Every ship was laboring heavily, few were in visual contact, and many could only lie dead, battered in the violent troughs of the sea, as their aircraft crashed about, or burned themselves to hulks as the result of the heavy weather. No carrier man had ever seen the like before. The rain was so heavy that visibility was almost nil. The light carriers stood up on their fantails or plunged their bows into the wild waters. To get about the decks men had to crawl along safety lines. One hundred degree arcs were standard performances. Planes that had been lashed to the decks, broke their bonds, yanked out the hold-down lugs, and slithered up and down. They collided with others and burst into flames. The *Monterey* caught fire and lost steerageway a few minutes later. The blaze was finally doused, but her skipper, Captain Stuart H. Ingersoll, let her lie dead until temporary repairs could be made. *Monterey* lost eighteen planes before the nightmare was over; some were burned on the hangar deck, and others blown overboard. Sixteen aircraft were seriously damaged, three of her 20-mm. guns were lost and the whole ventilation system was disrupted.

The carrier *Cowpens* had seven planes blown overboard. *Langley* pitched and rolled through seventy degrees which injured a number of crewmen and broke up valuable equipment. A fighter airplane went adrift on the *San Jacinto* and before it could be pinned down again it had wrecked seven other aircraft. Fires broke out on the flight deck of the *Cape Esperance* but were doused quickly. The *Kwajalein* had a maximum roll of thirty-nine degrees, her port catwalks scooped up water, and three of her aircraft had to be jettisoned from the flight deck. Three other escort carriers lost a total of eighty-six aircraft, but other than that escaped with little material damage to themselves.

Total aircraft losses in the Fleet, including those that were blown

overboard or jettisoned, amounted to 146, but the carriers' crews never flinched or failed. They disregarded their own safety to bring these hurtling, exploding, burning aircraft under control, but in mastering this typhoon many men lost life or limb.

As soon as the Third Fleet had recovered from the battle with Nature, Task Force 38 gave support to the Lingayen Gulf landings, but after recent experiences the aircraft complement of some carriers was revised. Two squadrons of Marine Corps Corsairs were established aboard the *Essex*, the first use of the Marine Corps air arm by TF 38. *Essex* and *Wasp* each carried ninety-one fighter planes and fifteen Avenger torpedo bombers. Then, in order to improve and extend night operations, a special night-flying carrier-task group, consisting of *Independence* and the newly converted *Enterprise* with a six-ship destroyer screen, was formed early in 1945.

When Admirals Halsey and McCain sortied from Ulithi on December 30 with the Third Fleet and Task Force 38, they were commanding the most powerful naval striking force the world had ever known. Both admirals were determined that 1945 would see the final wrap-up of Japanese sea power. They were to have their wish, but the immediate road ahead was rough. Halsey had hoped for air strikes on Formosa over January 3 and 4, a strike against Luzon on the sixth, and others against Luzon and Formosa on the seventh. After fueling on January 8 he would strike Formosa again the next day. If all these attacks brought the anticipated results, Halsey felt that he could move into the South China Sea.

Through the week of January 3-9 Task Force 38 flew a total of 3030 target or combat sorties, dropped 9110 bombs, and lost 86 aircraft. These operations, combined with the all-out efforts of the Army Air Force, must have saved hundreds of American lives in the Lingayen landings. Admiral Halsey was then permitted to steam out into the South China Sea in the expectation of rounding up the remnants of the Imperial Japanese Navy.

At the same time it was hoped that the first available squadrons of the new Super-Fortresses would be able to take over the task of keeping Formosa under control. Thus, the B-29s that were land-based in India and China played an important role in the Philippine campaign. The 20th Bomber Command, which had been hitting industrial targets in Japan since June 1944, also co-operated with the Third Fleet in the strike at Formosa, but these operations were restricted

by the fact that fuel had to be moved to the advanced bases by tanker aircraft that flew over the Hump through variable weather. Maintenance and repair facilities were less than adequate, and vast preparations had to be made for each major strike that was launched from the Chinese bases. Because of all these problems it was not possible to provide frequent attacks.

General Kenney's Far Eastern Air Force, having moved much of its equipment to Mindoro and Leyte in the Philippines, and Morotai in the Dutch East Indies, was also co-operating. Thus, when Admiral Halsey decided to risk a dash into the South China Sea, all available air and surface forces were mobilized to defend the Mindoro-Lingayen line.

While the combined operations occupied the enemy with raids on Formosa and other strategic points, the Third Fleet moved through Luzon Strait and into the South China Sea, and the fast-fueling group steered a southerly course through Balintang Channel without being spotted by the enemy. This force cleaned up dozens of enemy convoys and snoopers aircraft, while fighter and bomber sweeps from the carrier decks mauled airfields and dispersed airplanes. The destroyer *Hata-kaze* and a high-speed transport were sunk off Takao, Formosa.<sup>2</sup> Other strikes off Mako in the Pescadores finished an ancient destroyer, known as the *Tsuga*, and a Japanese weather station and radio installations on Pratas Island—a reef—were bombed by eight night-flying planes off *Enterprise*.

By January 15 the carriers moved to a striking position east of Hong Kong, hoping to complete the pattern of devastation of enemy shipping off the China coast, but bad weather was a great handicap, and our torpedo planes took beatings in the low-level attacks from intense antiaircraft fire. At the same time many of their torpedoes, with depth settings that were adjusted too deep, buried themselves in the harbor mud instead of in the bowels of ships.

Fighters swept enemy airfields along the coast of China from the Luichow Peninsula north to Swatow, but the results were not too rewarding. Admiral Halsey claimed to have sent five ships, aggregating 13,000 tons, to the bottom, but postwar investigation shows that only one freighter and one 10,000-ton tanker were sunk. The first day's bag of planes was thirteen, but the Third Fleet operational losses were twenty-seven planes, and combat losses twenty-two more, mostly from antiaircraft fire.

Japanese reports now said that TF 38 was bottled up in the South

China Sea. To some extent this claim was valid, and the situation turned out to be Admiral Halsey's main problem. What with threatening weather, refueling contacts, and the fact that the Japs still held Mindanao, he was indeed fortunate to move back to safety. During the eleven days of his intrusion, however, the Third Fleet had logged 3800 miles without serious mishap. It was well conceived and brilliantly executed, and it was unfortunate that more important targets—the capital ships of the Japanese Navy—were not within reach.

It will be remembered that the proposed major operations for 1945 were many, complex, and all crowded into a very short space of time. Lingayen Gulf was booked for January 9, Iwo Jima for February 19, Okinawa was down for April 1, and Kyushu November 1. It will be seen that in January, Admiral Nimitz had two major operations to carry out, and at the same time support General MacArthur and the Seventh Fleet until the Philippines were properly secured. Each commander considered his job the most important, and the distribution of naval forces between the Philippines campaign and those still on the docket was often the occasion for lively discussion, and the art of compromise had to be practiced constantly.

While General MacArthur and Admirals Nimitz and Kinkaid continued to press for their particular requirements, Admiral Halsey hewed to the line of his original plan to lead the Third Fleet through a series of actions designed to support the Philippines campaign. He earned some measure of success, but Task Force 38 was left hanging on the nautical ropes.

On January 21, after steaming through Balintang Channel to the north of Luzon, the carrier force changed course and headed for Formosa and a launching position about one hundred twenty miles east of Takao on southern Formosa. Early that morning all three task groups were launching fighter sweeps against Formosan airfields. Later fighter strikes were directed against enemy shipping when the weather was the best encountered that month. The airfields at Takao, Tainan, and Kirun were well worked over, and in a total of 1164 sorties flown 104 aircraft were destroyed on the ground. A postwar check disclosed that ten ships, including five tankers, were sunk, and the destroyer *Harukaze* damaged.

Although this air-strike effort brought some success, the surface Task Force was still fighting a grim war. The kamikaze furies came to life again, and American ships took a savage, damaging attack for the

first time since November. The Japanese were far from defeat—the Divine Wind had once more turned into a hellish gale.

At noon of January 21 the carrier force lay about one hundred miles east of the southern spur of Formosa. Rear Admiral Arthur W. Radford's Group 1 was twelve miles south of Rear Admiral Gerald F. Bogan's Group 2. Group 3, under Rear Admiral Frederick C. Sherman, was farther north, and caught the hate first. Picture, if you can, four destroyers being fueled from the battleships *North Carolina* and *Washington*, while the vessels steamed at sixteen knots. Just then four kamikazes, with three escort fighters, came roaring in. Six minutes later a lookout aboard *Langley* spotted a single-engined aircraft coming in down sun for an astern attack. The ack-ack boys took her on, but she managed to eject two small bombs that hit the forward section of the carrier's flight deck, opened up a gash ten feet by fourteen feet, and started small fires that were doused quickly.

The refueling was broken up, of course, and everyone moved out to diminish the target area. It took *Langley* three hours to effect temporary repairs before she could recover her aircraft. Below decks three men were dead and eleven wounded.

Two minutes after *Langley* was attacked a kamikaze came out of the sun and crashed the *Ticonderoga*. The hulk, carrying a 550-pound bomb, went through the flight deck and exploded between the hangar and gallery decks. A raging fire swept up among the closely spotted aircraft, which were gassed-up and armed for the next strike, and then spread to the second and third decks. For a time the situation appeared hopeless, but Rear Admiral Sherman ordered his group to take up positions of support while the crew of *Ticonderoga* carried out battle-damage and fire-control measures.

At the height of this anxious period seven kamikazes, escorted by six fighters, headed for Group 1. Apparently they had come out of the Babuyan Islands to the south. Eight Navy fighters from *Cowpens* were alerted and vectored to intercept, and so well was this fighter control carried out that a majority of the enemy formation was destroyed and the rest dispersed.

At 12:50 a second raid of eight kamikazes, with escorts out of Formosa, headed for Group 3. Some were intercepted immediately, six were shot down, but two escaped and attempted to dive on the harassed *Ticonderoga*. Despite their trials aboard the carrier the anti-aircraft gunners shot one out of the sky, but the other fulfilled his mission and crashed into the carrier's island structure. Once again

flaming gasoline enveloped the vessel and many aircraft that were spotted about the deck were damaged, but quick and efficient work had all fires under control by 2:15, and steps were being taken to correct a nine-degree list that had developed. At six o'clock that night the list had been reduced to three degrees, all compartments had been cleared of smoke, and the gunnery department was making a valiant effort to restore her fighting gear. Again, a severe price had been paid. Casualties included 143 killed or missing, and 202 wounded, including her skipper, Captain Dixie Kiefer who, although seriously hurt, recovered later.

The destroyer *Maddox*, in company with *Brush*, was on picket duty thirty-five miles closer to Formosa. It was their job to report planes flying toward the carrier force, recover dunked pilots, and carry out combat-air-patrol control. In spite of keen vigilance they were tricked by a kamikaze that had joined a returning flight of American planes. He should have been "de-loused," but at the right moment he peeled off and crashed the *Maddox* amidships at 1:10 P.M., or less than twenty minutes after *Ticonderoga* had been attacked the second time. His bomb exploded, but the result was comparatively minor and the fire was soon brought under control. Casualties were seven killed and thirty-three wounded.

When things start to go bad, the dice can be heavily loaded. At 1:28 a torpedo plane returning to the *Hancock*, Vice-Admiral McCain's flagship, made a successful landing, but just as it was being taxied up the deck a 500-pound bomb tumbled from its bomb bay and exploded. This caused heavy fires on the flight, hangar, and gallery decks. The one on the hangar deck was quenched within fifteen minutes and by 2:05 all fires were under control and emergency repairs under way. Again, the casualties were heavy. Fifty-two men were killed and 105 were wounded.

A special task group composed of two light cruisers and three destroyers, including the *Maddox*, was assigned to escort the *Ticonderoga* back to Ulithi. The rest of TF 38 headed north for more strikes against the Ryukyus. En route seven night-flying torpedo bombers were sent against Kirun Harbor. They sank a 10,000-ton tanker, but three of the aircraft failed to return.

Okinawa in the Ryukyus became a primary objective when on January 22 a photographic reconnaissance in anticipation of the campaign was carried out. A mixed bag of equipment was sent out, since it was desired also to destroy shipping and bomb airfields. How such a be-



wildering array of objectives was to be obtained is a mystery, but pre-dawn searches were started about 6:15 A.M. A total of 682 sorties were flown, of which forty-seven were photoreconnaissance. Fortunately, there was no enemy air opposition, and twenty-eight planes were destroyed on the ground. Admiral Halsey claimed that a very complete job had been done, but apparently there was a great deal left for the Fifth Fleet to work over before the landing was attempted in April.

TF 38 then turned south and returned to Ulithi for a well-earned rest. The work of the Third Fleet in the support of the Luzon campaign is worth consideration. More than 300,000 tons of shipping was sunk or destroyed and the number of enemy aircraft destroyed was 615. The cost to the United States Navy was 201 carrier aircraft, 167 pilots and air crewmen, and 205 seamen killed in kamikaze crashes. According to Admiral Halsey, "the outer defenses of the Japanese Empire no longer include Burma and the Netherlands East Indies; those countries are now isolated outposts, and their products are no longer available to the Japanese war machine except with staggering and prohibitive losses en route."

On January 26, 1945, Admiral Halsey turned over the command of the Third Fleet to Admiral Raymond A. Spruance.

Admiral Halsey's foray in the South China Sea brought an end to all major carrier operations in the Pacific war. Luzon was liberated and General MacArthur began his long trek toward Manila, and on March 11, as General of the Army, he returned to Corregidor from where he had been driven on March 12, 1942. Now the war went amphibious and the dread island-hopping was next on the calendar. Palawan and Zamboanga were secured after heavy fighting. The Southern Visayas, Panay, Negros, Cebu, and Bohol were taken after much sweat and bloodshed. Mindanao and the Davao Gulf demanded heroic measures and the co-operation of the PT boats. But the bloody attacks and advances went on until an Army Air Force B-29, named *Enola Gay*, spewed an atomic bomb that finally set up the complete capitulation of the enemy.

This then is the history of the aircraft carrier and its performance in its first major campaign. In previous pages we have seen that the flat-top played a very important role in the Pacific operations, and in those waters completely overshadowed the battleship as the prime weapon of the Navy.

In the European conflict, British carriers had no opposite numbers

and were limited in their activity, especially after the Mediterranean became the vital area of combat and strategy. It should be explained, however, that a number of British carriers had an active part in the Japanese war, once they could be released from their home waters. For instance, early in 1945 part of the British Fleet was based at Ceylon and Sydney, and a token force of four fleet aircraft carriers, *Illustrious*, *Indomitable*, *Victorious*, and a new 30,000-ton *Indefatigable* was in the Pacific.

These carriers came into prominence at the time with a program of attacks, one of which aimed at Palembang, Sumatra, proved to be most important. This was the site of the principal Japanese oil refinery from which more than three quarters of the aviation fuel for the Southwest Pacific was drawn by the enemy.

For some time American officials had planned to wipe out this plant with high-level precision bombing, much on the same scale as the U. S. air attacks on ball-bearing plants in Germany, but they had encountered the problems of weather. The refinery site was almost continuously obscured by low mist and tropical cloud and the chances of a successful high-level raid were very slim.

The British Naval Air Arm was given the opportunity of staging a surprise attack with the stipulation that it be completed in a very short interval, since the task was of primary importance to coming operations.

Aboard *Indefatigable* was a squadron of Fairey Firefly two-seater reconnaissance fighters. These planes are not to be confused with the earlier Firefly biplane. This aircraft could be armed with rocket projectiles, a weapon that the British had been using with rare skill and success for many months. In this case, however, this Firefly squadron had left British waters with practically no experience with these missiles, but by the time *Indefatigable* had reached the Japanese area sufficient practice had been made to risk this important attack. The main British force was led by Major S. B. G. Cheesman, a Royal Marines pilot of great valor and distinction.

The squadron took off in vile weather, made a flight of more than two hundred miles through low cloud and misty conditions. When they arrived over the target, the weather had cleared and Major Cheesman and his neophytes had a picnic. They went in for the attack and wisely concentrated on one particular section that housed important refinery equipment. Their salvos of rockets worked wonders, and

eventually this site was destroyed completely by resulting explosions and fire.

The success was almost immeasurable and the plant was out of commission until some time after the war. Japanese aviation squadrons were grounded because of this fuel shortage, and the Palembang complex exploit stood out as one of the most important British actions in the Pacific war.

At the same time other attacks, staged at regular intervals, extended from the Andaman Islands in the Bay of Bengal to Tokyo Bay. These were made by Avenger and Barracuda dive bombers off carriers in the Indian Ocean area, and by Fireflies, Corsairs, and Seafires—a naval version of the Spitfire—in the Pacific. On another occasion a task allotted to four British fleet carriers attached to the U. S. Navy was, in broad terms, to protect the left flank of the American advance on to Japan. This meant action in the Sakishima Islands' area off Formosa where the Japanese launched many kamikaze suicide bombers. Several British carriers were hit in these attacks, but owing to their heavily armored decks, damage was superficial. None of their carriers was out of action for more than two hours, and none had to withdraw from battle.

So far as is known, the U. S. Navy has not as yet adopted a truly armored carrier deck.

## CHAPTER XI

### THE MODERN CARRIER

THE READER will by now have begun to wonder about the future of the aircraft carrier. Unquestionably, it rendered a major service in the Pacific campaign against a foe who started with a series of unbelievable victories and then failed to furnish reserves in men and materials to consolidate his gains. It performed with great profit for the British, but in Europe there were no enemy carriers to counter it. The carrier was simply a mobile airfield for Great Britain and was employed accordingly. The police action in Korea afforded little opportunity to use the carrier in an important role; or any other modern weapon, for that matter. Only napalm, delivered by light bombers, paid its way.

Was the 1939-45 campaign the aircraft carrier's greatest period of triumph? Will it continue to hold its place as the Queen of the Seas? Will the thermonuclear weapon, which conceivably might decimate a whole task force, prove its undoing? Will it be replaced by a new type of nuclear submarine that can deliver atomic warheads, or even launch military aircraft?

It has been proved that had not the flat-top been developed, the airplane would have had a very limited function in World War II naval operations. It would have contributed only a negligible assist over the vast ocean areas that lie thousands of miles from land bases, and had the navies involved relied on the float planes catapulted from battleship or cruiser decks, their range and missions would have been of secondary importance only.

Because of these queries it may be of interest to review briefly what our present-day carrier forces have to offer, and what contribution they are likely to make in the future. Where will the carrier fit in the nuclear, thermonuclear, push-button conflicts we have been told lie in the future?

The modern aircraft carrier is one of the most complex devices created by man for the defense of his homeland. Its present-day progress and future employment may prove to be as important as any gains we may make in the science of nuclear warfare. Whether this type of warship will furnish the all-important deterrent in any future international strife, or whether the nuclear submarine, or the long-range ballistic missile have signed the death warrant of the carrier, are questions that face and puzzle our Joint Chiefs of Staff.

Our potential enemy has no aircraft carriers, and from all evidence at hand, has no intention of matching the United States Navy or the British Royal Navy in this very technical field. Whatever his status in the nuclear weapons armory, in the development of intercontinental strategy, or the production and training of fighting manpower, he has small hope of ever reaching a parity in the science of aircraft-carrier operations. Nevertheless, we should be warned by experience never to accept the military standards of today as the rules and techniques of tomorrow. In order to reach reliable conclusions, we should know how far the aircraft carrier has progressed since the Korean conflict when it was used chiefly in seaborne tactical aviation.

As has been shown, the carrier started out as a long-range weapon to protect the main surface fleet, but that concept was discarded after the Battle of the Marianas. Flight-deck ships of today make up the force of the front line, whether on attack or defense, for with their ability to launch long-range, heavy-attack planes, the carrier force can deliver practically any impact of offense from a rack of fragmentation bombs to a nuclear warhead. It can release conventional bombs that are capable of destroying enemy strong points, centers of communication, or vital transportation facilities. Its aircraft can deliver special projectiles for the disruption of enemy merchant shipping; its fighters can pour heavy machine-gun fire in support of friendly ground forces. If a global war threatens, the carrier can transmit full-power nuclear or thermonuclear weapons to any theater. In many cases, the carrier and its air group should be able to replace or augment the forces of the Army or Air Force. As of this writing, it cannot furnish much manpower for amphibious operations, except in cases where light carriers have been modified for helicopter-troop operations, but it can put up protective air cover to assure their success.

Possibly no modern weapon has reached the carrier's pinnacle of combined defense and offense. There is stowage, handling, and maintenance facilities for the Sidewinder, Sparrow III, and the Bullpup

guided missiles. This mechanical support system is divided into two divisions—conventional and special weapons. The carrier has stowage for over 1800 tons of conventional ammunition that is tucked away in 175,000 cubic feet of magazine space. This includes bombs weighing from 250-pound (general purpose) to 2000-pound, low-drag missiles designed for mass pyrotechnics, 20-mm. ammunition, guided missiles, and rockets. This great store of ammunition takes up 84 magazines, and 24 electric hoists are available to carry this explosive tonnage from the magazines to the hangar and flight decks.

The modern carrier is a most amazing, all-inclusive weapon. It can attack practically any military target, and at the same time defend itself. In theory it is not shackled to any land or sea area—*except when launching or taking on its aircraft*. It is highly mobile, flexible in action, and free to select its battlefield if an enemy puts it on the defensive. As an attacking force, today's carrier can take on any major concentration or critical center, regardless of the distances involved. Its air weapons are co-operative, and give mutual support. Long-range targets can be attacked, and the aircraft involved are assured of extra range by refueling in the air from companion planes. Enemy shoreline bases or naval establishments can be attacked from one area, and the attacking planes can return by another route to avoid interception, and be assured of finding their carrier in any predetermined position. This phase of action is a definite feature of modern carrier work.

All these factors are important, but the inherent weaknesses of this weapon cannot be ignored; weaknesses that have been noted in previous chapters. Most Navy officials are confident that the aircraft carrier is capable of defending itself, and they point out that it has a gunnery department, built around a five-inch weapon, and a fully controlled fire system beneath protective turret accommodation. These weapons can fire twenty-five rounds a minute through an accurate chart of defense. The fighter planes should provide an immediate pattern of defense in meeting, engaging, and destroying attackers before they can reach a position from where they can launch their main attack, whether by torpedoes, dive bombs, or high-altitude saturation bombing.

But does the aircraft carrier actually retain this deterrent? Will it stand up in any future war, brush-fire or global? Is it worth the astronomical sum spent in its building and upkeep? Can we continue to recruit the legions of skilled manpower that are required to keep it

at sea? Is it, as many sound minds in the Navy Department believe, the ultimate weapon?

One researching group in the Navy assumes that a nuclear stalemate will continue to exist, and points out that our nuclear stockpile can wipe out any enemy several times, but by the same token the United States is endangered by the nuclear capability of its most likely adversary. Each side has fears and qualms; each knows the other is capable of massive retaliation. Any sane consideration of this shows the need for residual power in the event of enemy attack. This leftover and intact power can be built up by the Navy to a very high degree, and could spell the difference in our retaliation and survival. Better still, it could be the prime factor in deterring the enemy from making his attack.

Carrier forces and Polaris (nuclear) submarines are the principal means of maintaining this leftover and intact power. The range of their weapons, the enemy's difficulties in locating them, and their mobility through the oceans give them special advantages. Mobile land-based weapons can, and perhaps will, be difficult for the enemy to locate, but meanwhile the Navy is determined to keep itself in the van of the shifting nuclear picture until it is made abundantly clear what its weapons can contribute, and what can be achieved with mobile land-based weapons.

From an engineering standpoint today's carrier is unbelievably massive. The main propulsion plant—non-nuclear—occupies an area 280 feet long and 90 feet wide, and is located in the mid section of the hull. Power for the main propulsion is generated in four spaces, each containing two boilers, two turbines and their reduction gears, in addition to miscellaneous auxiliary equipment. Each main propulsion space drives a shaft to a twenty-two-foot propeller. The boilers generate steam at 1200 psi—pounds per square inch—and at 1000° Fahrenheit to supply energy to the turbines. Each boiler is capable of producing 300,000 pounds of steam per hour. The turbines in turn develop a total of 280,000 hp under full power.

The water used in these boilers and for the various domestic uses is distilled from sea water in four evaporators, each capable of producing 50,000 gallons per day. Boiler feed-water storage capacity is 180,000 gallons, while potable-water storage capacity reaches 315,000 gallons.

Considerable fuel is required to produce this power, and 2,650,000

gallons of heavy oil is usually carried. This oil is a thick low-grade product that must be heated to enable the pumps to deliver it to the fire nozzles. The electric power necessary in this mechanical complex is generated by eight 1500-kilowatt turbine-driven generators. Two 250-kilowatt, 400-cycle motor-generator sets, and two 600-kilowatt, 400-cycle turbine-driven generators supply power for general purposes. An emergency service is furnished by three 1000-kilowatt diesel-driven generators.

These factors and statistics are interesting and important, but the carrier's prime mission is the launching and recovery of her aircraft, the weapons that deliver her war impact. In a 60,000-80,000-ton carrier of the U. S. Navy, aircraft are launched faster than from any other type carrier in any other navy. Her four catapults are powered by steam from the ship's boilers, and the refinements in the operating mechanisms enable the flight-deck officer to launch four planes every thirty-eight seconds. In the rest of the sequence the hydraulic arresters will stop 70,000 pounds of jet aircraft within 150 feet after it touches down at speeds better than one hundred miles an hour.

The formula for launching and recovering aircraft, whether a drill, general operations, or wartime combat offers a fascinating experience. Both aircraft crews and pilots are alerted by a bugle call known as "Flight Quarters" which puts a thousand men to work. Deck hands rush to their stations, the air crews charge out of the Ready rooms, and the Primary-Flight officer, known as Pri-Fly, gives the order: "Respot the deck!" Blue-shirted plane handlers move like shuttles rearranging the planes for a quick launching operation. Three elevators groan and rattle as they bring required aircraft from the hangar to the flight deck. The first aircraft off are two helicopters, known as Angels, which hover or fly nearby over the starboard quarter to set up rescue operations in case any plane is forced into the water.

Red-shirted crewmen finish topping off the tanks and secure the tip-tanks while their G-suited pilots or air crews make themselves secure and comfortable, assisted by the plane captains who help adjust belts and shoulder straps.

The flight plan, set up by the Air Operations schedule and previously sent to the squadrons for briefing, is fully understood, and all pilots have condensed copies in metal frames strapped to their thighs for convenience. This data includes code names for the carrier, the operation, and the squadron. It gives required radio frequencies, bearings, and distances to the nearest land bases. It also has clear spaces



for filling in information as it is compiled, which is used later in the pilot's official report of his whole operation. Prior to the launch Air Operations has sent all weather and navigation information to the Ready rooms. Thirty minutes before the launch, "Man Your Planes" is sounded and pilots and aircrews are rushed to the flight deck by means of a special escalator; to climb all the ladders and companionways necessary to make this journey, would be exhausting with the weight of clothing and equipment.

Pri-Fly next gives the command: "Stand Clear of all Props, all Intakes and Exhaust . . . Start Engines!" Propellers flash or jet engines scream and whine. The propeller-driven aircraft are started fifteen minutes before take-off, the jets five minutes later.

The officer of the deck orders the ship brought into the wind for the first launch. The planes taxi forward and are turned over to the yellow-shirted plane director who stands well clear of the jet blasts and in a position where he can be seen by the pilot. Before arriving at the catapult rigging position, the director gives the "Stop" signal, and the hold-back unit is rigged or attached. Next, the heavy cable bridle is hooked in and tension is checked by the director who points at the deck at a 45° angle. He requests partial power and then turns the tune-up and control over to the catapult officer who wears a green shirt.

The air officer lowers the white launch flag from the Pri-Fly bridge while the catapult officer drops to one knee and thrusts out his arm. When everything is ready, the catapult gear stiff, the pilot alert, the take-off clear, the catapult officer points a forefinger at the deck and somewhere below at the catapult console, a button is pushed and the plane screams away for its take-off.

The activity, timing, and training of these deck crews are an outstanding feature of carrier operations. While the piloting and airmanship witnessed are almost unbelievable, and the skill necessary to fly planes on and off these decks is something only a few will ever see or appreciate, it is the work of the deck crews who prepare the planes for catapult or fly-off take-offs, and recovery, that first strikes the landsman.

A plane will move out of a spotted space under the guidance of a deck worker. It will roll into position over the catapult shuttle, and almost instantly it is set, the heavy bridle which weighs 190 pounds, is hooked in—not only to the aircraft, but to the recovery lines that prevent the cable from being hurled into the sea. All these hookups

must be made with clocklike precision, and every adjustment must be perfect or the take-off may end in tragedy. The signals from the men huddling under the plane must be sharp and clear to the catapult officer. All this is carried out while the men scurry, lie on their bellies, or stand crouched under the nose of the plane as the propeller or jet engines scream and a plume of murky, excess steam drifts through this Dante-like tableau. If one item of the sequence is incorrect, the take-off will fail; it may switch the aircraft over the side, it may spin it around and tear it to shards, or it may snap the plane toward the lip of the deck and then refuse to release it. Again tragedy will result, for, still shackled to some portion of the catapult gear, the plane will have its underbody ripped out and the wreckage and all it contains tossed under the knifelike prow of the carrier or sucked into the ship's whirling screws.

A dozen important signals must be made, received, and understood. Only keen teamwork contributes the daily meticulous accuracy, and it is noticeable that in practically all cases there is perfect co-ordination, sincerity of effort, and even affection between the air crews and the plane handlers. In fact, after a long cruise and many exercises, pilots tell me that the co-operation is refined to what almost amounts to a transference of thought. In this case, many of the signals can be dispensed with, and all operations are carried out with simple facial expressions or lip reading. But only after many months of continual practice can this spirit be risked.

Once a plane or squadron is in the air, control is passed from Air Operations to the Combat Information Center (CIC). From here in a darkened vault below decks, voice circuits in key positions throughout the ship keep everyone advised of the progress of the launch. The air controller in CIC follows the planes or plane on his radar during the full cycle of eighty to ninety minutes until the return to the carrier. Once they leave CIC control they are turned back to Pri-Fly or to the Carrier Controlled Approach officer for landing instructions.

A few years ago a pilot on landing his plane aboard a carrier relied on the arm and paddle movements of the Landing Signal officer. Today he is guided in his approach by a grouping of colored lights set around the Mirror Landing System, with the L.S.O. only assisting. This Magic Mirror is mounted on a flexible bracket that compensates automatically in a small way for the pitch and roll, if any, of the flight deck. It can be adjusted to the difference in the position of pilots in different planes. For instance, one pilot may be sitting in a relative

position of fifteen feet above the deck, the next may be only nine feet above it. To accommodate this the mirror can be raised or tilted to change the pilot's angle of approach, making each one come in at the proper angle, according to his particular line of vision.

A pilot using the Magic Mirror simply brings his aircraft to the stern of the carrier. Ahead he sees a square mirror into which a red light is reflected. All he has to do, once he is in his glide path, is to keep the red light centered in the mirror and fly in under its guidance. The mirror in this particular piece of equipment is precision ground and costs \$11,000. The pilot may be in radio communication with Pri-Fly or the Flight Deck officer, but if it seems necessary to wave him off because of a faulty approach, a series of bright red lamps snap on around the mirror, and he "goes around" again to remedy his error.

These recovery operations demand the same fidelity and trust between the pilot and the landing crew. He must not only rely on his own skill and judgment, but he must believe every instrument before him, as well as the guidance provided by the landing mirror. It might be noted here that the U. S. Navy is experimenting with a new gunsight landing system, in which the pilot, after setting all controls for a normal landing, peers down a gunsight tube at a deck light or marker. Once he has this target spot centered, radar control takes over and brings him in. So far this has been worked out only on a land-based "deck," but from all accounts it will be tried aboard an actual carrier deck shortly.

The arrester gear, which began with a series of ropes strung across a small platform aboard the old U.S.S. *Pennsylvania*, has gone through many phases and improvements. Today it is a very elaborate and complex device, and in general consists of five or more 2½-inch steel cables held a few inches above the deck by curved bars resembling automobile springs. Each cable is 1700 feet long, and only a small portion of this is seen above the deck, the rest runs down into a cable room several decks below where it is taken into a maze of pulleys, and controlled by hydraulic pistons.

The layman observing a series of deck landings will note that the average plane coming in sets up a number of immediate problems. In the first place it will be approaching at about 120 knots (about 137 statute miles per hour), or about 90 knots (103 statute miles), allowing for the 30-knot speed of the carrier. To stop the plane dead is out of the question. It must be allowed some flexibility of movement and

gradually snubbed to a halt. The average snubbing distance is about two hundred feet.

Once the cable has been caught by the hook, inertia carries the plane forward some sixty-five yards, which means that from 400-500 feet of cable—not 200 feet—is pulled out because extra cable has been drawn from wells on each side of the deck in a long V. At rest, these five or six cables pass through apertures in the deck, run over a series of pulleys to each side of the arrester-gear compartment some distance below where they are wound over a series of drums, and their ends connected to piston heads set in long buffer chambers. The whole device acts similar to a large hydraulic shock absorber, except that the cables are more flexible and must be free to run at high speed to handle this type of snubbing.

In order to accommodate all types and weights of aircraft, the snubbing can be adjusted quickly by operators who are advised of the type coming in by an officer on the deck. These arrester-gear operators never see the aircraft they are controlling. Jet planes come in at speeds between 120-145 knots, and propeller airplanes land at 90-100 knots. Each arrester-gear cable has its own "engine," and there is always another for the special emergency barricade made of webbed nylon. This device will halt safely a plane if for any reason it is out of action, such as breaking its hook, or if the regular arrester gear is not working. In this case the pilot comes in, makes a normal landing and brakes as best he can until the nylon-web barrier brings him to a halt. Usually the barrier is cut to ribbons and some damage inflicted on the aircraft, but in most cases the pilot is uninjured, and the plane can quickly be made serviceable.

Here again the carrier pilot relies completely on the deck crew, and almost every member is in grave danger while the incoming aircraft is engaged with the arrester-gear cable. If the landing is normal and correct, if the hook grabs, and the cable holds to arrest the plane, all goes well. But there are many areas for slip-up. If a landing-gear leg collapses, the plane will most likely slither into a group of deck handlers and maim or kill several of them. Suppose a cable is caught and arrests the plane up to a point and then breaks—some five hundred feet of wild, flailing steel cable writhes, and slashes at everything within reach.

A short time ago a chief petty officer and two crew members were killed and nine others injured by a wild cable. A man need not be standing on the flight deck; he may be crouching in the catwalk and

have his head suddenly snapped off by a flailing whip, or he may be crushed to death by a plane that has slithered off the landing area. Nevertheless, these men are always in their assigned positions, waiting to help their pilots. An airplane may catch fire after making a normal landing; the pilot may be injured and need immediate attention; he may be unable to help himself in a dozen emergency situations. The deck men are always on hand to lift him clear of the wreck, free an entangled cable, or simply guide him to his proper parking area.

If his plane is fit and serviceable, just requiring refueling, the pilot gives a "thumbs-up" signal. If it is in no state to fly again, he signals the reverse, and it is moved to an elevator or spotted where temporary repairs can be made.

Most aircraft carriers of today are built with the angled flight deck, an arrangement of landing space that permits more efficient launching and recovery operations. It was originated by the British Navy which also contributed the Magic Mirror and steam catapult.

The angled deck, seen in several of the accompanying illustrations in this book, is a portion of the deck that is angled out about ten degrees to port from the stern lip. With this arrangement incoming planes have no trouble "going around" again if their attempt to land is unsuccessful. If an aircraft coming in fails to pick up a cable, it continues on, banks away, goes around and is termed a "bolter." If it takes a cable, and then loses it for some reason, it continues on and either flops into the sea or flies clear. In the previous arrangement where the flight-deck line ran down the center of the ship, any such faulty landing would result in the plane's crashing into a number of aircraft parked on the forward portion of the deck. The angled section also allows more space for plane parking and routine deck work, since the recoveries are confined to a small section reserved for just that.

How long the angled deck will be standard equipment is a moot question. Plans for a new generation of aircraft carriers for the British Navy are now being worked out by service experts; being considered are vessels somewhat larger than Great Britain's present-day 43,340-ton *Ark Royal*, that would be capable of handling not only aircraft in service within ten or twelve years' time, but also cope with aircraft flying with the Royal Navy twenty-five years from now.

These future carriers will show radical changes in the flight deck; the angled deck will be dispensed with and the island structure moved from its position on the deck edge to a point farther inboard.

Aircraft landing on the port side will taxi to a parking and refueling position set up on the other side of the island, and the forward section of the deck will be reserved for launching operations.

The island itself may also undergo some alteration. Instead of the present bulky structure, it may be replaced by a construction, narrower at the base—perhaps only ten feet wide—with overhanging bridge and flying control, something on the order of a railroad signal house. Such planning would not be feasible with the smaller type of carrier, but considering the aircraft of the next few years, carriers are not likely to gross less than 50,000 tons.

This brings up the subject of night-landing operations. The reader will recall the confusion and tragedy that marked the close of the Battle of the Philippine Sea when hundreds of American Navy planes, caught by darkness, had a difficult time in getting back aboard their carriers. Today, this problem has been faced and mainly overcome, but during World War II U. S. Navy carrier pilots were not exactly proficient in the art, and very little experimental work had been carried out prior to Pearl Harbor. In contrast, night operations were routine aboard British carriers, and had been for some time before 1939. What was done aboard Japanese flat-tops has never been spelled out.

Contrary to the general impression, night landings are not carried out under intense artificial illumination. All lighting is kept to a minimum, chiefly as an aid to the pilot's night vision, which is most important. The deck itself is marked out with white or yellow lines that are very helpful, but small hooded white lights, no larger than a pocket flashlight, are set into the deck which indicate only the outlines of the main runways and do not set up a strong glare.

As one pilot pointed out to the author, the ship is always clearly seen from the air during good weather and the outline of the angled deck is not difficult to find, but if he came out of the darkness of the night sky and bored into the strong glare of massive illumination, he would be blinded temporarily. If he missed the arrester gear and had to "bolt," the quick change from deck glare to comparative darkness would be very dangerous, and it would be minutes before night vision was obtained again.

So all modern night operations are performed in semidarkness. The deck crews work under the low glow of red torches, and all signals are made with electric wands that show clearly but do not glare, and there are several colors, just as there are colored jerseys to indicate the various tasks.

There are, of course, more "bolts" and rough landings at night; the heavy jets in particular seem to come in much faster and when they hook into the cables they stretch them farther forward than they do in daytime activities. In one hour of night operations I noticed several fast and dangerous touchdowns, and two interceptor fighters each blew a tire.

The aircraft aboard the modern American carrier cover a wide range of performance. There are A3D, all-weather bombers; A4D, jet attack planes; AD-6, propeller attack aircraft; F3H, Demon attack planes; F4D, Skyray fighters; F11F, Tiger interceptors; and F8U, Crusader interceptors. All these are valuable and important in their particular roles, but none reaches the pinnacle of performance of Willie Fudd, the Grumman WF-2. This ungainly beast is the modern Kilroy of the United States Navy; his opinions, statements, commands, and hair-raising profundity are to be found all over every carrier with lead captions running something like this: "Willie Fudd, him'a say . . ."

The name Willie Fudd was created from the WF-2 designation of this workhorse of most VAW—Aircraft Warning—squadrons. I was introduced to Sweet William during a cruise in the Mediterranean aboard U.S.S. *Independence*.

The primary mission of the WF aircraft is Advance Early Warning. Its secondary mission is antisubmarine warfare. Willie's chief weapon is radar, particularly the Navy's new APS-82 type, which is more accurate, powerful, and efficient than any used previously. The WF aircraft should not be confused with the earlier Grumman "Guppy" which carried its chief radome in a compartment below the fuselage, thus the guppy appellation.

As a mobile information center Willie Fudd apparently has no equal. The WF can take off from carrier decks or land bases. It can stay in the air on station, operating for six hours. It does not have high speed, but generally speaking, speed is not important. The platform is the thing. The WF can range out and search over a wide area, providing information not only for the surface fleet, but for the fleet aircraft. Senior controllers aboard can direct fighter formations against enemy aircraft. They can detect enemy aircraft, pinpoint their position, speed, direction of flight, and, most important, they carry a quick-reading instrument that gives the "bogies'" height. They can vector photography planes to their targets, bring in stragglers, and furnish reliable information concerning enemy surface activity. In other words the Willie Fudd teams are Navy men first, and flying men second. They are experts in all recognition problems.

The crews, called teams for a good reason, consist of two pilots and two skilled Naval Air observer controllers who are Combat Intelligence Center-trained. These men are radar and radio experts and are drilled continually in all types of Advance Early Warning and anti-submarine problems. The controllers' posts are set up before an intricate panel built behind the pilots' seats. Here they have a ten-inch radarscope, some flight instruments, and half a dozen other instruments that are used in their varied and intricate duties. Both pilots are trained controllers and can take over either seat to give the regular controllers a break, or to check any particular problem where three minds are superior to two. These men rotate on the various radar-scopes and relieve one another in the mission problems. The controllers can seldom relieve the pilots, although in many instances some of these men were once pilot candidates who for some reason washed out, or requested other flying duties. In an emergency, it must be presumed that one of them might get the airplane back to the carrier or to a beach strip. One of the pilots also serves as a tactical director.

Another responsibility of Willie Fudd is to relay the picture seen on his own radarscope, over a radio circuit to a radarscope aboard the surface flagship. This system is known as the Bellhop and is very important for it moves out the horizon of the surface vessels and gives more people the opportunity of interpreting the picture which is well beyond the range of their own antennas. This factor alone is worth the price of the aircraft, the crew and their training.

Since it was designed to carry bulky equipment into critical areas, the WF-2 is hardly a thing of beauty. The radome is a large bulbous casing mounted about three feet above the wing, and extends back to the fin point of the fuselage. Inside, the large antenna twirls through 360 degrees and supplies the reception equipment for the main search radar. It also carries an integral antenna used by the instrument that registers the height of the enemy aircraft. The radio is handled over two UHF and one HF circuits, and all three may be used at the same time.

In addition to all this electronic assistance, the WFs can do COD—Cargo on Deck—duty and drop messages to the fleet. They have quick-jettisoning fuel gear for emergency purposes, but other than the pilots' .38-caliber pistols, carry no ordnance. They fly at great altitudes for obvious reasons, and their teams are on oxygen most of the time, and this service is piped through the aircraft and passes through a system of coils which transforms it to breathable oxygen. The crew



is self-sufficient in that they have galley service, can feed themselves, and have toilet comfort and sanitation. They take part in search and rescue work but do not carry rescue equipment. Their task is to find as quickly as possible the downed aircraft, the surviving crew, learn the general condition, and vector the rescue helicopters, destroyers, or flying-boat equipment to the scene. Nothing much can be done until Willie Fudd finds the target—whatever it is.

Our most important defense against enemy submarines is probably found in the airborne force aboard our carriers. The aircraft employed are not high-speed jets, but work-horse piston-engined planes that carry specially trained crews and the latest in track-and-trace instrumentation, weapons, and radar. Their greatest weakness is the possible breakdown of the intricate communications necessary to make the system function.

The available planes are not particularly well-fitted or designed for the work, and at best are vehicles that have been modified from previous types, or have been hurriedly equipped to cope with the situation. One gets the impression that the designers load the aircraft with a lot of instrumentation, and then hope it will do the mission that was assigned formerly to two airplanes that worked together. Most of today's antisubmarine planes are overloaded or badly loaded for efficient flying.

Besides conventional aircraft the Navy also uses H.S1 helicopters that are capable of moving fast to a suspect area and hover for long periods. They carry sonar and radar equipment, and for the eventual attack have a homing torpedo that is discharged from a tube fitted to the side of the cabin.

The conventional type aircraft—S.2F Grumman—is fitted with a searchlight and ECM equipment—electronic countermeasure—with its antenna in a radome set above the pilot's cockpit. It carries a crew of four, can cruise for four hours or more on station, and fight with torpedoes or six five-inch rockets. It also mounts depth charges on the rocket rails, and various arrangements of these weapons can be set up. This is the typical all-in-one airplane, and although the electronic equipment is a great help, the Mark-8 Eyeball, as normal vision is called, is still the best detector. The S.2F also carries a Julie instrument and a set of sonobuoys.

The Julie system makes use of the explosive echo-ranging technique for the detection and location of submarines, which is based on the

principle that accurate timing between the creation of the sound and the receipt of its echo permits calculation of the distance between the submarine and the source of the sound.

Sonobuoys are small but expensive instruments used to find a submarine after it has been spotted and has submerged to hide. The sonobuoys are dropped in a circular pattern, with one in the center at the datum point. If the submarine has moved in any direction from where it was last seen, at least two other sonobuoys will pick it up.

Each sonobuoy is a small transmitting station, and each transmits on a different frequency. When one hits the water it lowers a microphone that will pick up any sound emitted by the submarine; this sound can be created by engines, propellers, or interior noises. Thus, if any sound is picked up, several of the sonobuoys will detect it. The Number 1, or center, instrument will transmit on its frequency, as will any two others near the sound. These three frequencies will provide a segment or area, like a slice of pie, in which the enemy submarine is moving. As it moves away the impulses increase or decrease, furnishing clues that are recorded aboard the airplane. The position of the loudest sound shows which way the submarine is moving. These sonobuoy instruments will remain active for about three hours.

Aboard *Lake Champlain*, a true antisubmarine warfare carrier, a special squadron of fourteen helicopters is equipped with most regulation ASW gear, and they generally are first into a suspect area. These aircraft also carry a fish-line microphone that is lowered into the water on a ninety-foot wire, while the copter hovers at twenty-five to thirty feet. This practice relies on sonar evidence of the hunted submarine, but much of this work is hampered by fast moving destroyers carrying out their sonar track-and-trace work, or by low-flying fixed-wing aircraft.

Another antisubmarine instrument that is mounted on some of the carrier's aircraft is known as MAD—Magnetic Aircraft Detection. This device works through the magnetic field given off by the target; it checks the changes in the earth's magnetic field that may be caused by "foreign" bulks in the water, just below the water, or just protruding from the water. The unusual MAD antenna protrudes from the rear of the fuselage for about twelve feet and resembles the perforated exhaust of a racing car.

With all this, and with all the specialized training the various crews or teams undergo, detection of enemy submarines is not completely

satisfactory. Apparently there is no single item that gives a reliable answer to the submarine threat, particularly against the tactics of the nuclear submarine. In the first place, the target is very small, is very fast and maneuverable, and most evasive. Submarines are—or were—comparatively cheap to build, operate, and to train crews. Any attack or defense measure requires too great a force in men, machines, and money, and although there is no real solution as yet, each service officer understandably pushes for his own contribution, and probably believes that he has the answer.

Will offshore or land-based equipment meet the threat?

Will aircraft carriers furnish the answer?

Are long-range patrol boats of any great value?

Will a conventional surface fleet, including submarines, supply the weapons?

Apparently, what works in one area is a failure in another. There is one argument, based on the variations of water temperatures, that even sonar is not of great worth. Recent reports indicate, however, that the system has been vastly improved. But whatever service is to be saddled with the problem of the enemy submarine will be haunted by the rapid turnover of skilled men. Specialists and technicians, particularly in the electronic fields, are walking about carrier decks with letters in their pockets from many of the big industrial companies that offer them jobs, doing much the same work at much better rates of pay. To compete with these tremendous turnovers in all departments, long-serving men must be parceled out to support the half-trained groups, so that at no time can we boast that any vessel is at full strength.

The United States Navy believes its carrier force is the great deterrent, and points out that it can move to any part of the world at a rate of six hundred miles a day. The greater part of the world is composed of water, and these vessels and their auxiliary support can steam practically anywhere. They can carry out strategic or tactical warfare. They can fight brush-fire wars faster than any other service. They can employ conventional or atomic weapons quicker, and because of all this play a very important role in the NATO problem.

The Navy's Polaris submarine is perhaps the most important factor of American defense. It can be used immediately, or at any point of time. It cannot be blasted out of action, since it is always on the move.

The Navy also argues that Air Force installations probably will be destroyed by the first enemy attack, and since we have stated over

and over again that we will not make the initial strike, we must presume the enemy will attack first.

Although the U. S. Navy has a number of Polaris missile submarines on station, it would appear that their targets are at present undecided. The Strategic Staff wants to aim for: 1) enemy missile centers, and 2) great centers of population. The second target, it is believed, will have profound effect on the Soviet Government, which for years has been showing its satellites how strong it is and how well bound together is the Communist world. If Polaris missiles were to destroy several large cities, more than a routine military blow would have been struck; it would indicate the political disintegration of Soviet strength. This makes these areas prime psychological targets.

This military potential brings up the question: If the Polaris missile has such capabilities, why do we continue to build expensive aircraft carriers, train skilled crews, and equip the decks with complex aircraft and weapons?

As has been explained, the carrier is at its best when engaged in brush-fire wars. In a thermonuclear conflict, it would not last thirty minutes, and many a carrier skipper has told me, "Just give me thirty minutes in which to launch my planes, and what happens to the carrier after that will have no effect on the outcome of a war. We will have delivered a full arsenal of atomic weapons ourselves and paid our keep." But gaining those thirty minutes might be the great problem, for any present-day thermonuclear weapon would not only destroy the carrier, it would wipe out the whole task force. Of this we are certain; only a very alert Willie Fudd will be able to give his carrier commander that most valuable half hour.

Within many circles of thought, in several admirals' cabins, at senior officers' tables, and at Air Force dining rooms one gathers the view that both sides realize the futility of all-out atomic war. All agree that nothing can be gained by the ruthless use of atomic weapons. No war can be won by such devastating measures, for there will be nothing left to invade or "liberate." Whatever campaigns are to be fought in the future will be carried out within the limits of tactical—brush-fire—warfare. Both sides will continue to build up their atomic stockpiles, but only as a last and final resort will these weapons be used. On this theory, then, we continue to build, equip, and man aircraft carriers.

## TOLL OF AIRCRAFT CARRIERS LOST DURING WORLD WAR II

NAME	DATE	COUNTRY	ACTION
<i>Courageous</i>	Sept. 9, 1939	Britain	Torpedoed
<i>Glorious</i>	June 8, 1940	Britain	Sunk off Norway
<i>Ark Royal</i>	Nov. 14, 1941	Britain	Torpedoed off Gibraltar
<i>Audacity</i>	Dec. 21, 1941	Britain	Torpedoed in North Atlantic
<i>Hermes</i>	April 9, 1942	Britain	Sunk by Japanese aircraft
<i>Mizuo</i>	May 5, 1942	Japan	Torpedoed
<i>Shoho</i>	May 7, 1942	Japan	Sunk by torpedoes and bombs
<i>Lexington</i>	May 8, 1942	U.S.	Sunk by Japanese aircraft
<i>Soryu</i>	June 4, 1942	Japan	Sunk at Battle of Midway
<i>Akagi</i>	June 4, 1942	Japan	Sunk at Battle of Midway
<i>Hiryu</i>	June 4, 1942	Japan	Sunk at Battle of Midway
<i>Kaga</i>	June 4, 1942	Japan	Sunk at Battle of Midway
<i>Yorktown</i>	June 7, 1942	U.S.	Sunk after torpedoing at Battle of Midway
<i>Eagle</i>	Aug. 11, 1942	Britain	Torpedoed west of Gibraltar
<i>Ryujo</i>	Aug. 24, 1942	Japan	Sunk off eastern Solomons
<i>Wasp</i>	Sept. 26, 1942	U.S.	Torpedoed by Japanese
<i>Hornet</i>	Oct. 26, 1942	U.S.	Lost during Battle of Santa Cruz
<i>Avenger</i>	Nov. 15, 1942	Britain	Sunk during Algerian landing operations.
<i>Liscomb Bay</i>	Nov. 24, 1943	U.S.	Torpedoed off Gilberts
<i>Chuyo</i>	Dec. 4, 1943	Japan	Sunk by torpedoes
<i>Block Island</i>	May 29, 1944	U.S.	Torpedoed in Atlantic
<i>Shokaku</i>	June 19, 1944	Japan	Torpedoed by submarine
<i>Taiho</i>	June 19, 1944	Japan	Torpedoed by submarine
<i>Hitaka</i>	June 20, 1944	Japan	Sunk by aircraft bombing
<i>Otaka</i>	Aug. 18, 1944	Japan	Torpedoed
<i>Unyo</i>	Sept. 16, 1944	Japan	Torpedoed

NAME	DATE	COUNTRY	ACTION
<i>Princeton</i>	Oct. 24, 1944	U.S.	Torpedoed off Luzon Island
<i>Gambier Bay</i>	Oct. 25, 1944	U.S.	Sunk off Samar Island
<i>St. Lo</i>	Oct. 25, 1944	U.S.	Sunk by kamikaze attack
<i>Zuikaku</i>	Oct. 25, 1944	Japan	Sunk by aircraft bombing
<i>Zuiho</i>	Oct. 25, 1944	Japan	Sunk by aircraft bombing
<i>Chitose</i>	Oct. 25, 1944	Japan	Sunk by aircraft bombing
<i>Chiyoda</i>	Oct. 25, 1944	Japan	Sunk by aircraft bombing
<i>Jinyo</i>	Nov. 17, 1944	Japan	Torpedoed
<i>Shinano</i>	Nov. 29, 1944	Japan	Torpedoed
<i>Unryu</i>	Dec. 19, 1944	Japan	Torpedoed
<i>Ommaney Bay</i>	Jan. 4, 1945	U.S.	Sunk by aircraft bombing
<i>Bismarck Sea</i>	Feb. 21, 1945	U.S.	Sunk by aircraft bombing
<i>Amagi</i>	July 24, 1945	Japan	Sunk by aircraft bombing
<i>Kaiyo</i>	July 24, 1945	Japan	Sunk by aircraft bombing and minefield

## TOTALS

Japan lost 22 aircraft carriers  
 U.S. lost 11 aircraft carriers  
 Britain lost 7 aircraft carriers

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## BIBLIOGRAPHY

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- Perchance*, B. J. Hurren, Nicholson & Watson.  
*Birds and Fishes*, Phillip Joubert de la Ferté, Hutchinson of London.  
*Fleet Air Arm*, Lieut.-Commander P. K. Kemp, Herbert Jenkins.  
*The R.N.V.R.*, J. Lennox Kerr and Wilfred Granville, George G. Harrap & Co. Ltd.  
*Proud Fortress*, Allen Andrews, E. P. Dutton & Company, Inc.  
*Battle for the Solomons*, Ira Wolfert, Houghton Mifflin Company.  
*Admiral Doenitz—Memoirs*, Admiral Karl Doenitz, The World Publishing Company.  
*Mission Beyond Darkness*, Lieut.-Commander Joseph Bryan III and Phillip Reed, Duell, Sloan and Pearce.  
*Destroyer Man*, Rear Admiral A. F. Pugsley, Weidenfeld and Nicholson.  
*History of Marine Corps Aviation in World War II*, Robert Sherrod, Combat Forces Press.  
*Air Power: Key to Survival*, Alexander P. de Seversky, Simon and Schuster.  
*Fleet Air Arm*, (Official) British Naval Ministry of Information.  
*Ark Royal*, (Official) British Naval Ministry of Information.  
*Everyman's History of the Sea War*, (3 volumes) A. C. Hardy, Nicholson and Watson.  
*History of United States Naval Operations in World War II*, (14 volumes) Samuel Eliot Morison, Atlantic-Little Brown.  
*The Second World War*, (6 volumes) Winston S. Churchill, Houghton Mifflin Company.  
*The War*, (5 volumes) Edgar McInnis, Oxford University Press.

- Flattop*, Barrett Gallagher, Doubleday & Company.  
*Midway*, Mitsuo Fuchida and Masatake Okumiya, United States Naval Institute.  
*Combat-Pacific Theatre*, Don Congdon, Dell Publishing Company.  
*Aircraft Carrier*, Joseph Bryan III, Ballantine Books.  
*With Ensigns Flying*, David A. Thomas, William Kimber and Company, Ltd.  
*Day of Infamy*, Walter Lord, Henry Holt and Company, Inc.  
*The Divine Wind*, Inoguchi, Nakajima and Pineau, United States Naval Institute.  
*The British Navy's Air Arm*, Owen Rutter, Penguin Books.  
*War in the Air*, Gerald Bowman, Evans Brothers, Limited.  
*Pocket History of the Second World War*, Henry Steele Commager, Pocket Books, Inc.  
*Coastal Command*, (Official) Air Ministry of Information.  
*Queen of the Flat-tops*, Stanley Johnston, E. P. Dutton & Company, Inc.  
*Zero*, Martin Caidin, E. P. Dutton & Company, Inc.  
*Pearl Harbor to Coral Sea*, Walter Karig and Welbourn Kelley, Farrar and Rinehart, Inc.  
*Battle Report*, Walter Karig and Welbourn Kelley, Farrar and Rinehart, Inc.  
*Heroes of the Pacific*, Ted Shane, Julian Messner, Inc.  
*The Last Nine Days of the Bismarck*, C. S. Forester, Little, Brown & Company.  
*The Battleship Scheer*, Theodor Krancke and H. L. Brennecke, William Kimber & Co., Ltd.  
*73 North—The Defeat of Hitler's Navy*, Dudley Pope, J. B. Lippincott Company.  
*Victory at Midway*, Griffith Baily Coale, Farrar and Rinehart, Inc.

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